STATE OVERVIEW

Geographic Overview

Idaho is a Rocky Mountain state known for its scenic beauty and abundant natural resources. Fertile soil, rich mineral deposits, thick forests, and numerous rivers and streams have supported agriculture, mining, and forestry since the Idaho Territory was established in 1863. Idaho's state seal symbolizes the strengths of the state: a woman holding the scales of justice; a miner representing the mining industry; an elk symbolizing Idaho's abundant wildlife; a pine tree for the state's forests; and a sheaf of grain representing the importance of agriculture.

Idaho contains 44 counties (Fig. 1).

Idaho is 64% publicly owned, and as such is managed primarily by two agencies: the USDA Forest Service and the USDI Bureau of Land Management (Fig. 2). Because of this, Idaho presents a different scenario for conservation than states that are predominantly privately–owned. Rather than being relegated to site–based approaches to conservation, resource managers have the capacity to implement landscape–scale conservation strategies. At this scale, conservation can be viably designed around entire systems whereas site–based conservation focuses on component pieces.

Natural Resources and Land Uses

Idaho landscapes are particularly diverse in terms of topography, climate, and geology. The topography is characteristically rugged, comprising numerous mountain ranges, countless valleys and canyons, and expansive plains (Fig 3). Elevations span about 3640 m (12,000 ft). Climate is also variable, trending from the hot and dry conditions typical of the Snake River Plain and canyons of central and southern Idaho to the relatively mesic, maritime–influenced climate of the northern part of the state (Fig 4). The geologic history is equally varied, ranging from the recent basalt fields of the Snake River Plain to the ancient deposits of the central and northern mountains (Fig. 5).

These conditions contribute to the variety and abundance of natural resources to be found in the state. Fertile soil, the basis of Idaho's agricultural industry, is one of the state's greatest economic assets. The prairie and plains soils were developed from volcanic deposits and windblown material called loess. Alluvial soil, made up of

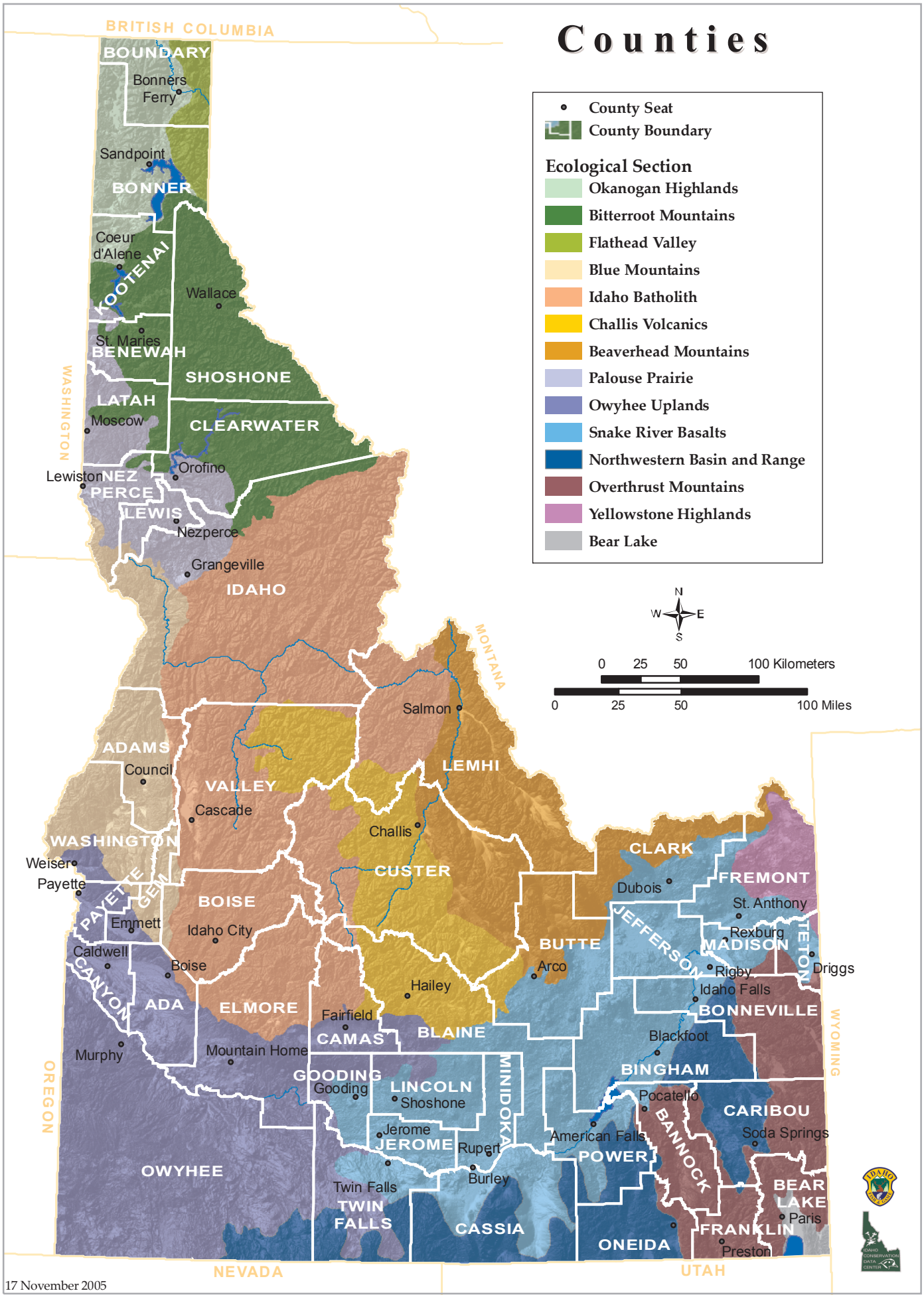

Figure 1. Map of Counties in Idaho.

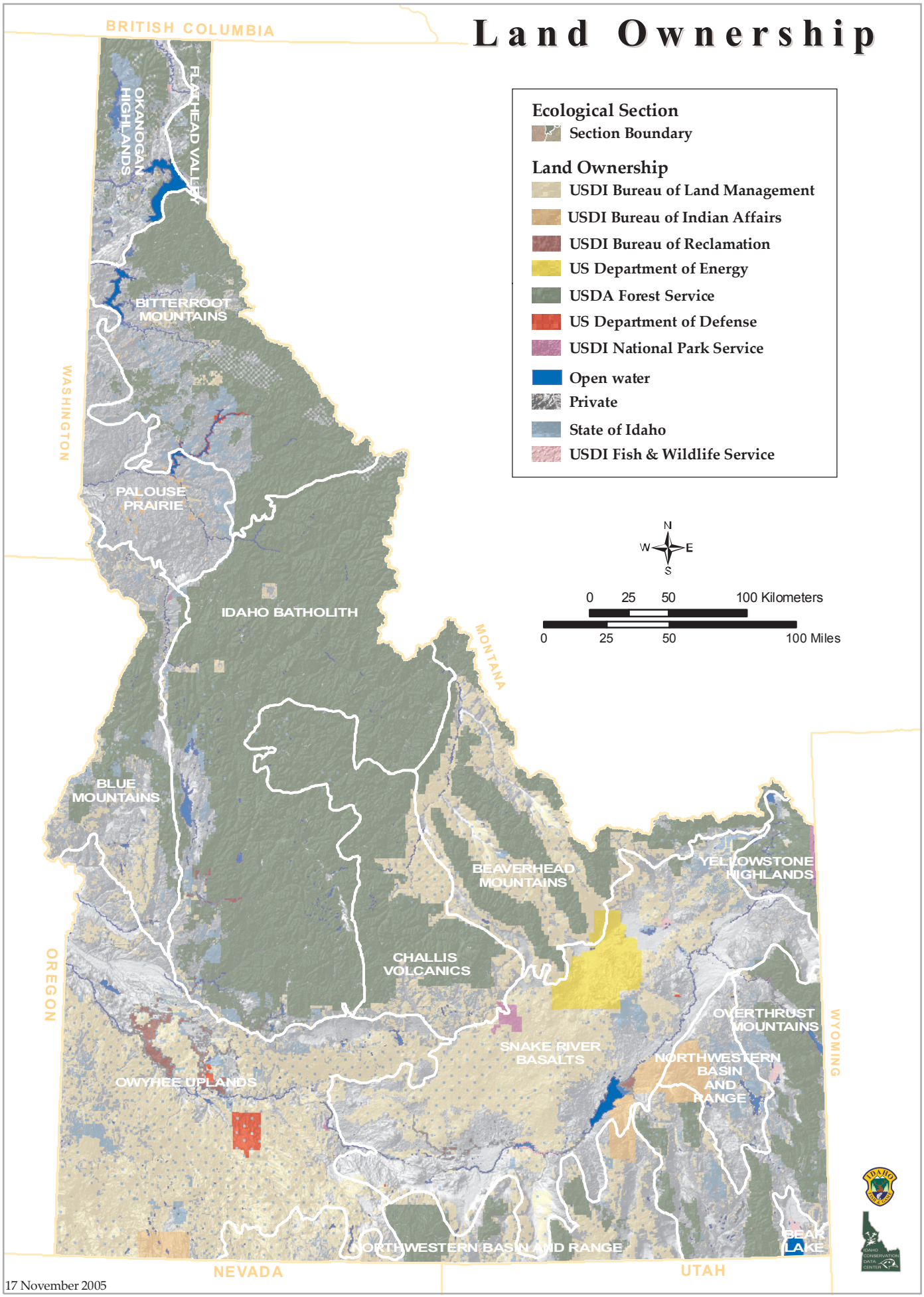

Figure 2. Map of Land Ownership in Idaho.

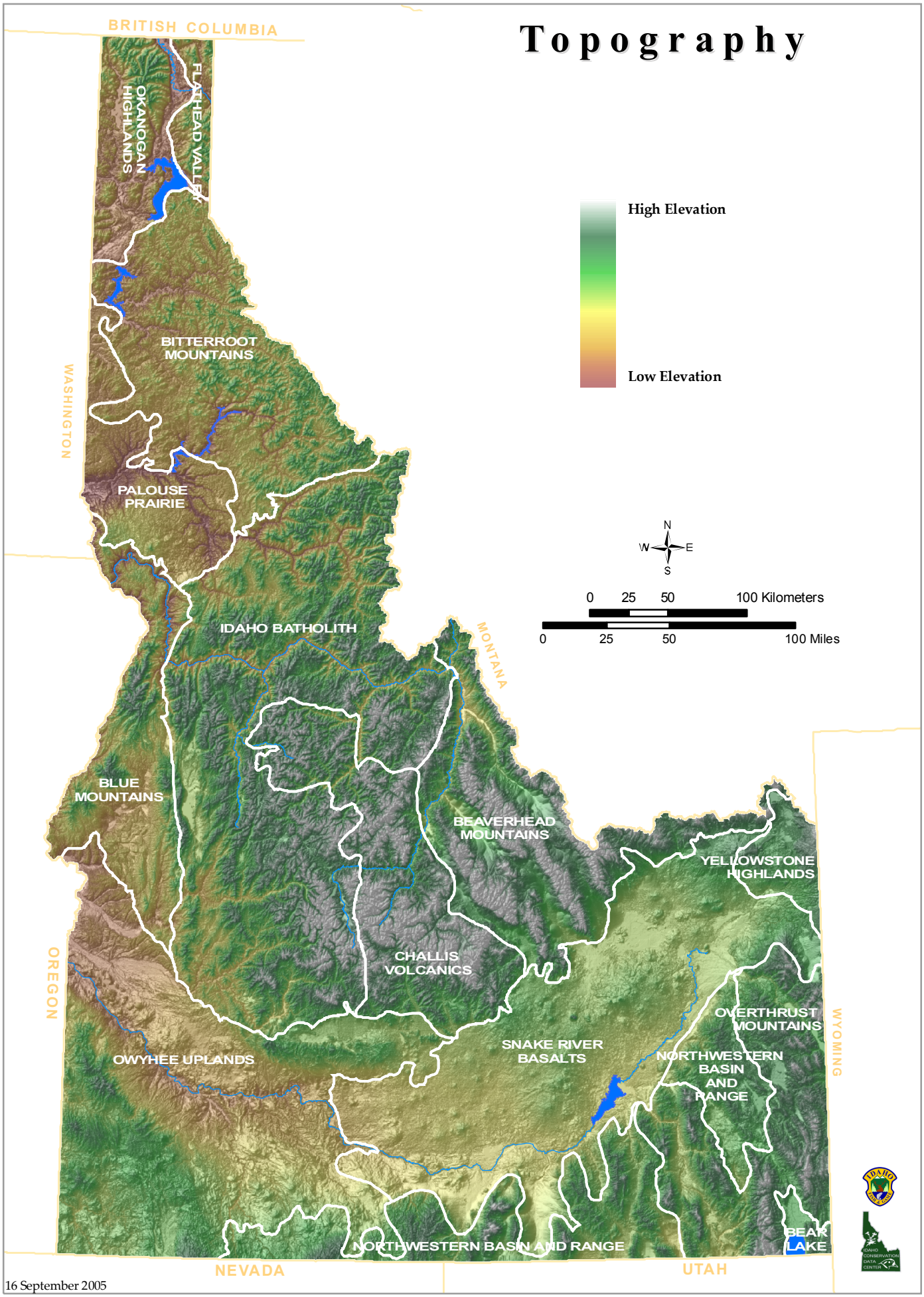

Figure 3. Map of Topography in Idaho.

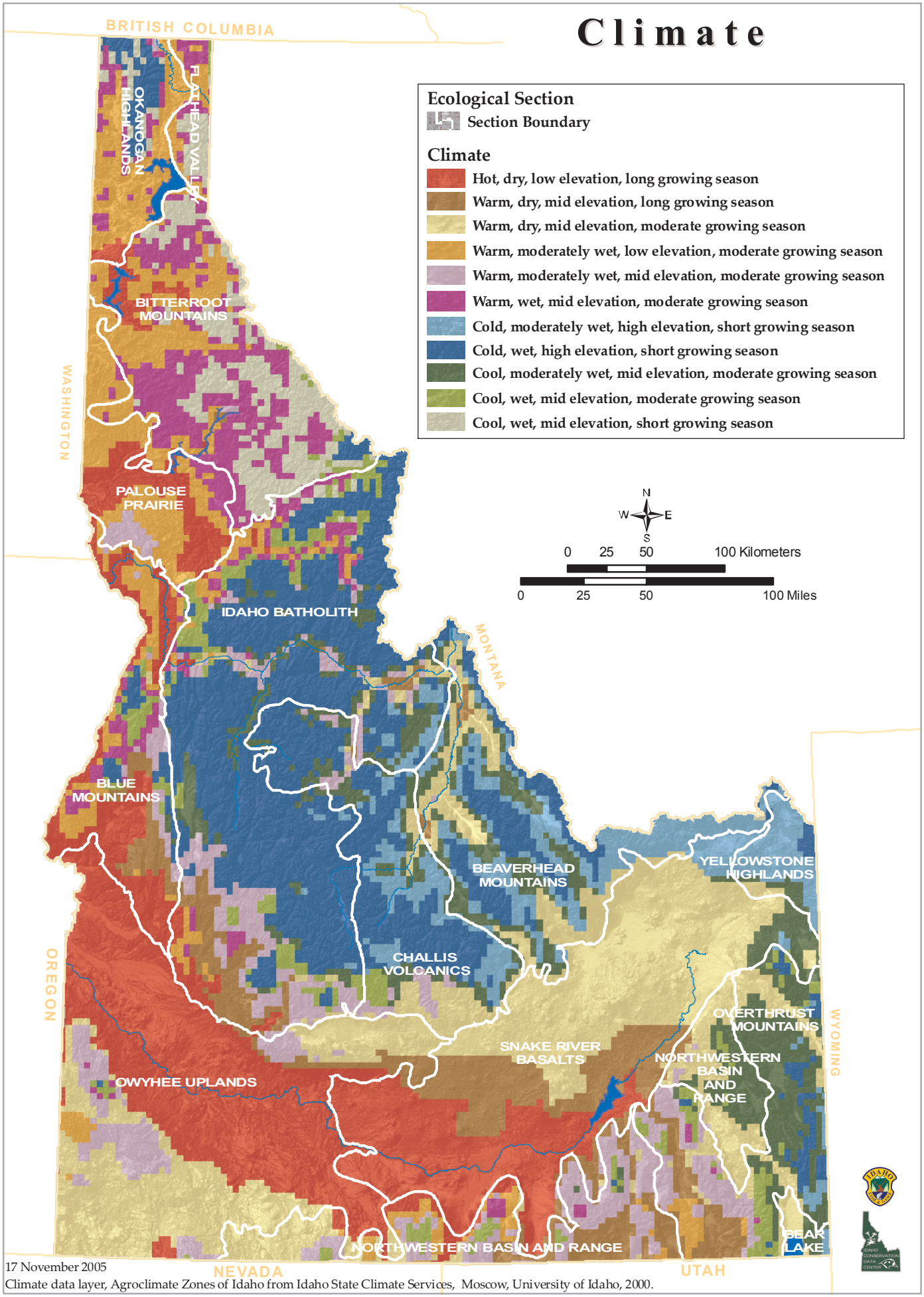

Figure 4. Map of Climate in Idaho.

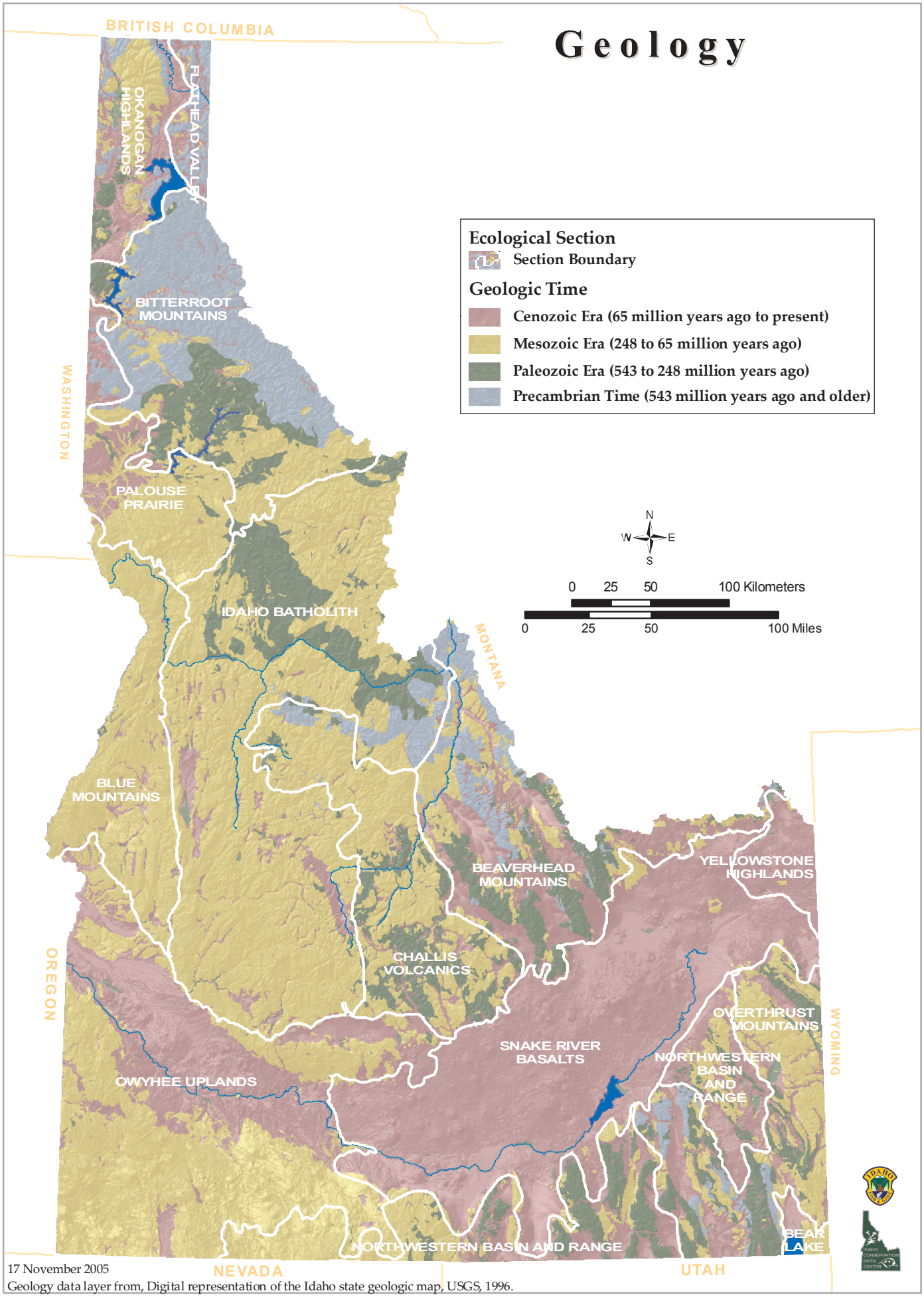

Figure 5. Map of Geology in Idaho.

material deposited by streams, covers some of Idaho's mountain valleys. Soil developed on glacier–deposited materials support the northernmost forests.

Commercial mineral deposits have been found in all of Idaho's 44 counties, with some of the largest mineral deposits in the northern Panhandle. The state's richest mineral resources are silver, phosphate, and molybdenum. All of Idaho's phosphate rock comes from the southeastern part of the state. Major copper, lead, silver, and zinc deposits lie in Shoshone County. Deposits of antimony, cadmium, clay, cobalt, garnet, gold, lead, limestone, sand and gravel, thorium, tungsten, uranium, vanadium, and zinc are also found in the state.

Of all Idaho's resources, water is considered its most valuable. Most of the precipitation falls in the winter as snow, particularly in the southern part of the state. Five large water systems cross Idaho, and the Salmon and Clearwater rivers lie entirely within the boundaries of the state. The Salmon is the largest undammed river system in the lower 48 states. The state has large underground water resources.

Forests cover about 33% of Idaho's land area (Fig 6.). Most of Idaho's trees are cone–bearing softwoods, especially Douglas–fir, Engelmann spruce, hemlock, lodgepole pine, ponderosa pine, western red cedar, western larch, white fir, and white pine. Deciduous trees such as birch, cottonwood, and quaking aspen also grow throughout the state.

Agriculture covers nearly one quarter of the state of Idaho (Fig. 6). Cropland is irrigated in the southern half of the state where potatoes, wheat, hay, sugar beets and barley are the main crops. Non–irrigated cropland in the Palouse region of the state produces wheat and barley. Cattle ranching occurs throughout the state but is most prevalent in the southern half of the state (adapted from Scott et al. 2002).

Large sections of Idaho's landscape are mountainous, remote, largely undeveloped, and in federal ownership. Nearly one quarter of the state—over 4 million acres—is included in designated wilderness or inventoried roadless areas (Fig. 8, 9). The largest in the state, and the largest contiguous wilderness in the lower 48 States, is the Frank Church–River of No Return Wilderness (2.4 million acres / 9712 km^2). The Frank Church–River of No Return Wilderness is located in central Idaho within the Boise, Bitterroot, Nez Perce, Payette, and Salmon–Challis National Forests. Adjacent and north, the Selway–Bitterroot Wilderness (1.3 million acres / 5261 km^2) straddles the Bitterroot mountain range along the Idaho and Montana border, and includes large parts of the Lochsa and Selway River drainages. Gospel Hump Wilderness (206,053 acres / 834 km^2) is located west of the Frank Church–River of No Return Wilderness, east of Riggins, Idaho, and north of the main Salmon River. Located on the Idaho–Oregon border, Hells Canyon Wilderness encompasses 213,993 acres / 866 km^2. Sawtooth Wilderness (217,088 acres / 879 km^2) is located 60 miles northeast of Boise. The smallest wilderness area in Idaho, Craters of the Moon National Wilderness Area (43,243 acres / 175 km^2), is located west of Idaho Falls and north of Rupert.

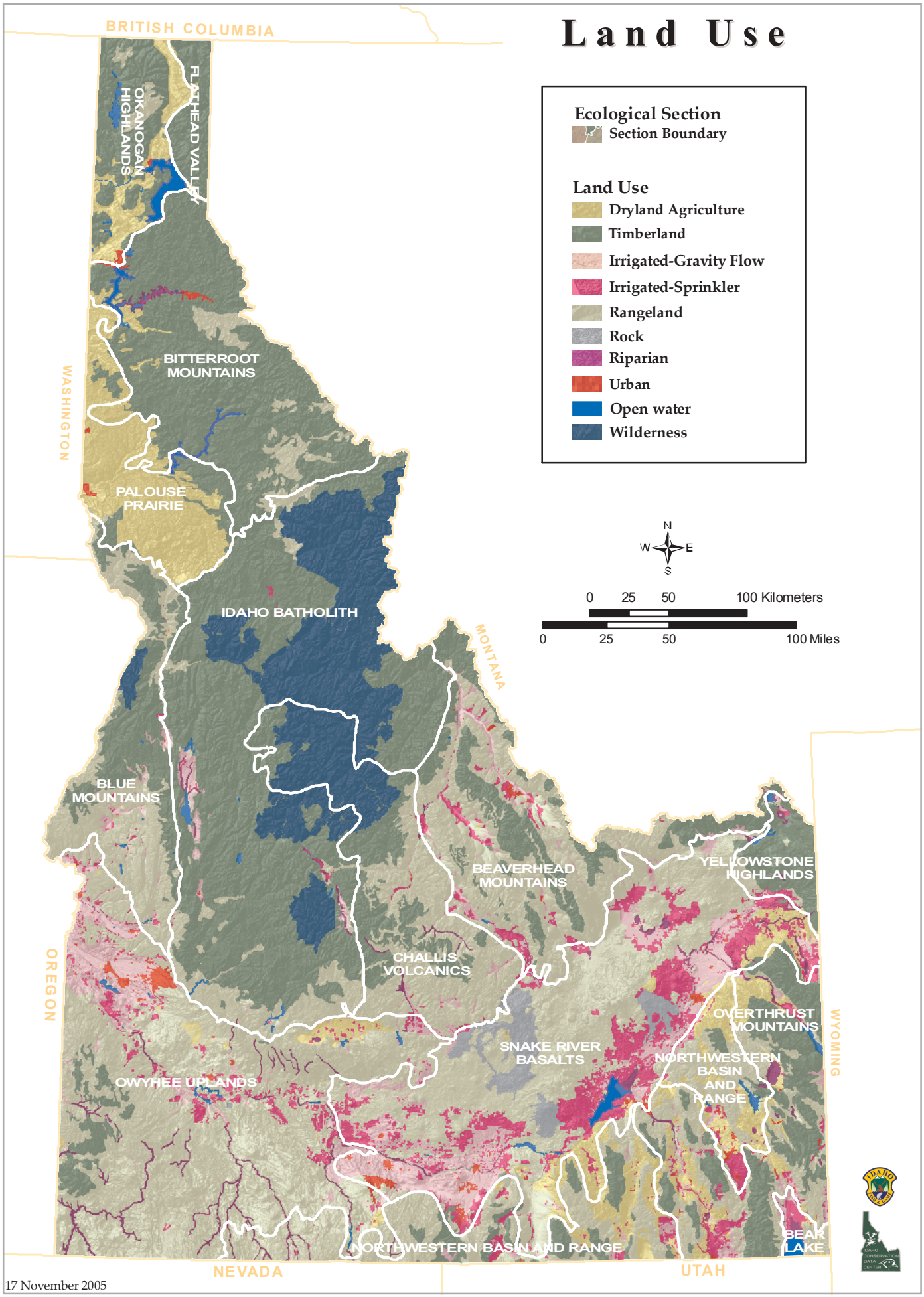

Figure 6. Map of Land Use in Idaho.

Ecoregions and Ecological Sections

Idaho comprises 5 ecoregions (Fig. 7): the Canadian Rocky Mountains in the northern part of the state, the Middle Rockies–Blue Mountains across the central part of the state, the Columbia Plateau that follows the Snake River across the state, the Utah–Wyoming Rocky Mountains along the southeastern boundary of the state, and the smaller Wyoming Basins in the southeastern corner of the state. These ecoregions are subdivided into 14 ecological sections: the Okanogan Highlands, Flathead Valley, Bitterroot Mountains, Blue Mountains, Idaho Batholith, Challis Volcanics, Beaverhead Mountains, Palouse Prairie, Owyhee Uplands, Snake River Basalts, Northwestern Basin and Range, Yellowstone Highlands, Overthrust Mountains, and Bear Lake.

The **Canadian Rocky Mountains Ecoregion** extends over a large portion of the Rocky Mountains from southeastern British Columbia and southwestern Alberta to northern Idaho and northwestern Montana. The Idaho portion of this ecoregion is comprised of 3 ecological sections: the Okanogan Highlands, Flathead Valley, and Bitterroot Mountains. Elevation in the entire ecoregion ranges from 915 to 3954 m (3000 to 12,972 ft). Geologically, this ecoregion is complex, containing bedrock of sedimentary, igneous, and metamorphic origin largely characterized by steep glaciated overthrust mountains with sharp alpine ridges and cirques at higher elevations. Historic and current glaciation has sculpted the mountainous landscape filling many of the intermountain valleys with glaciofluvial deposits and moraines. Vegetation in this ecoregion is dominated by coniferous forests with structure largely dictated by elevation. This ecoregion is best recognized for its full complement of large mammals—one of the few places left in North America that can make this claim (Rumsey et al. 2003a).

The **Middle Rockies–Blue Mountains Ecoregion** is characterized by a large mass of mountains and intermontane valleys covering major portions of Oregon, Idaho, and Montana, and a small part of Washington. Although the Middle Rockies–Blue Mountains ecoregion is consistent in terms of broad climate, physical and biological patterns, it is remarkably diverse when viewed at finer scales. In Idaho, four ecological sections are represented in this ecoregion: the Blue Mountains, Idaho Batholith, Challis Volcanics, and Beaverhead Mountains. The relatively arid lowlands of the Columbia Plateau and Northern Great Plains ecoregions lie to the west, south, and east, while the Canadian Rocky Mountains and Utah–Wyoming Rocky Mountains ecoregions lie north and south along the cordillera. The ecoregion covers 81,587 square miles (52,215,958 acres) and, by comparison, is only slightly smaller than the state of Idaho. While the ecoregion is topographically diverse, it can generally be characterized as rugged. Abrupt elevational changes of 3,000 to 4,000 feet from valley floors to mountain summits are not uncommon. At the extreme is Hells Canyon of the Snake River, along the Oregon–Idaho border, where, in the deepest part, the elevation drops 8,000 feet in just four miles. The lowest elevation in the ecoregion is 790 feet, where the Snake River flows out of Hells Canyon south of Lewiston, Idaho, while the highest occurs on Borah Peak at 12,662 feet, in the Lost River Range of central Idaho (TNC 2000).

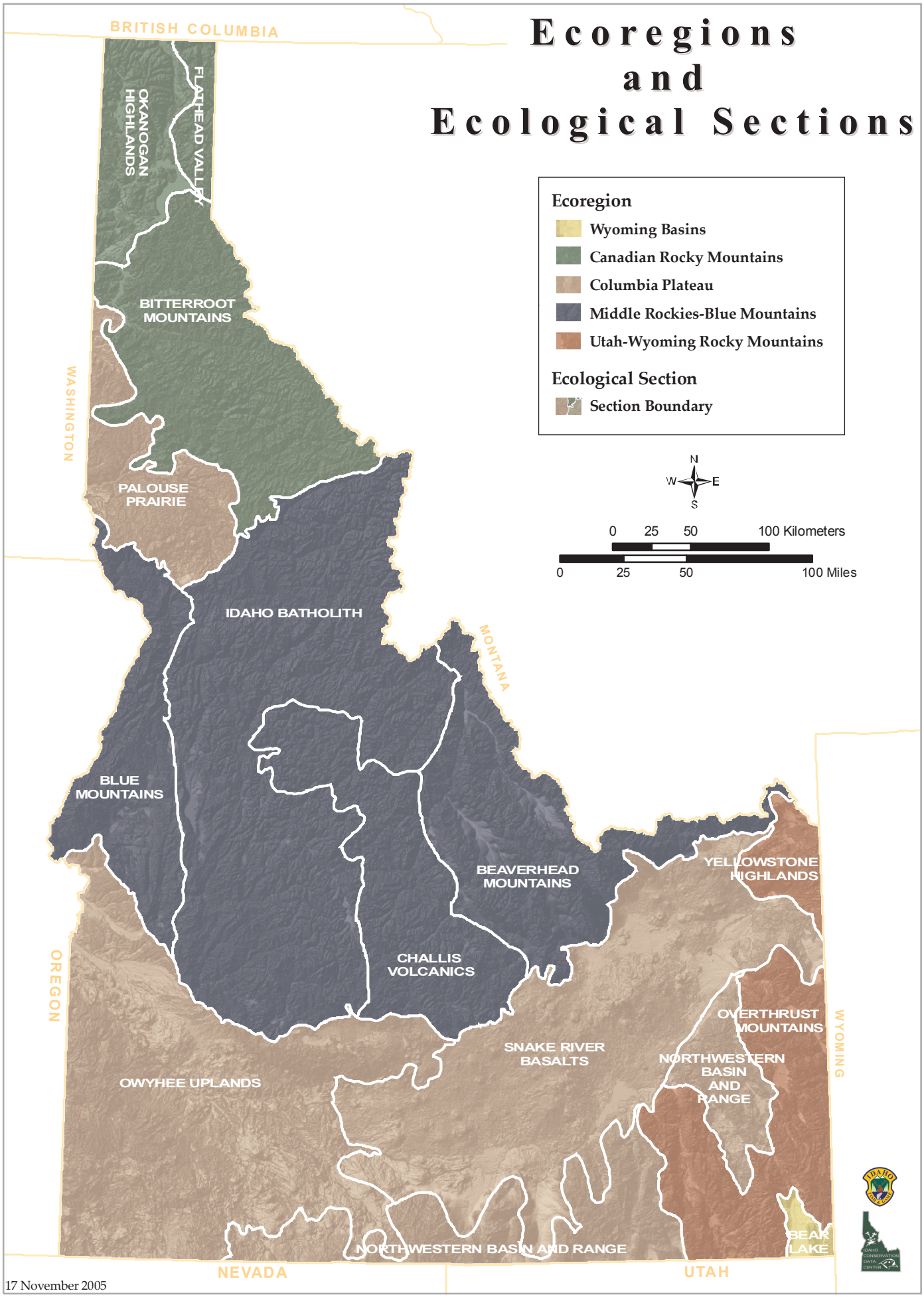

Figure 7. Map of Ecoregions and Ecological Sections in Idaho.

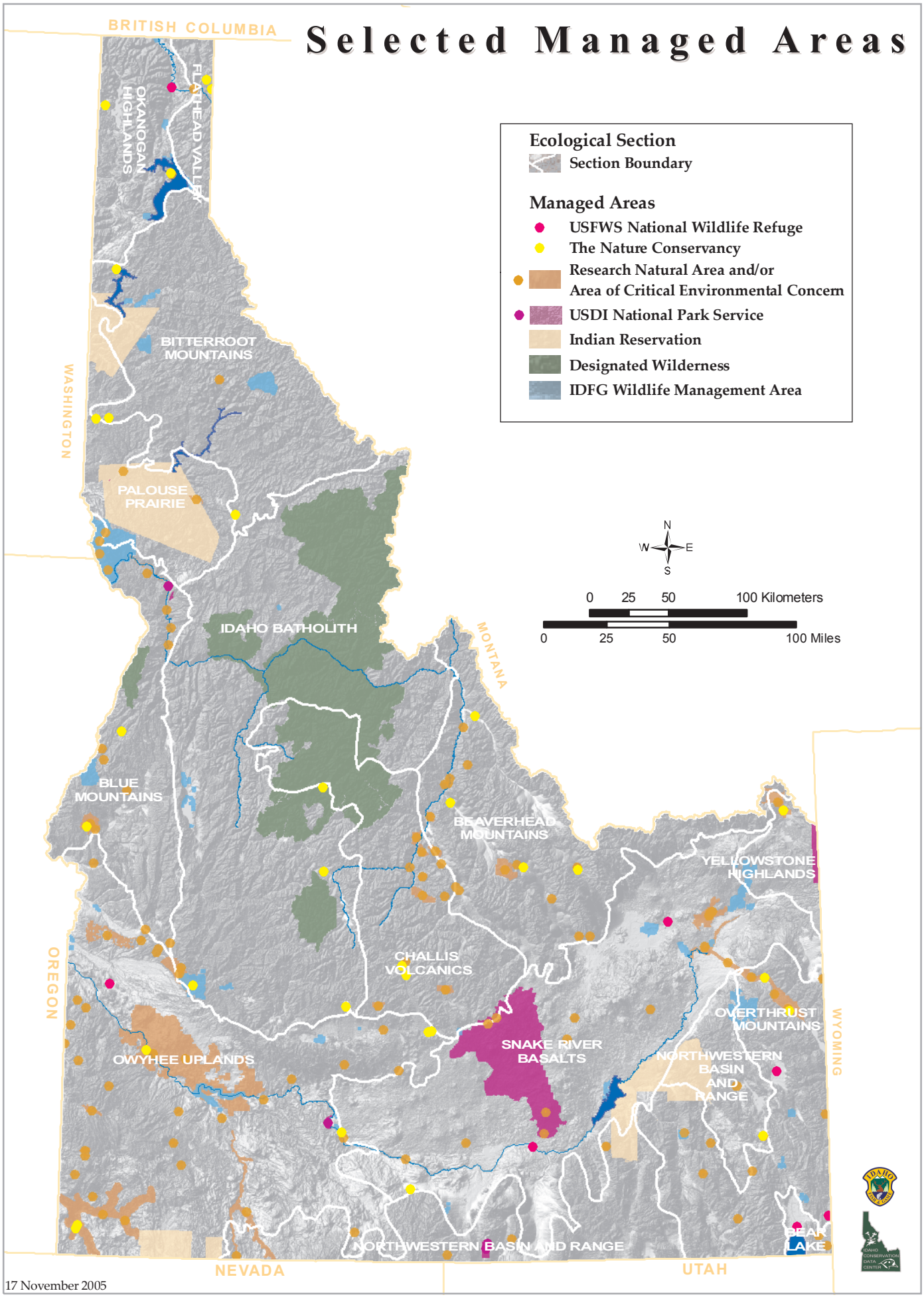

Figure 8. Map of Selected Managed Areas in Idaho.

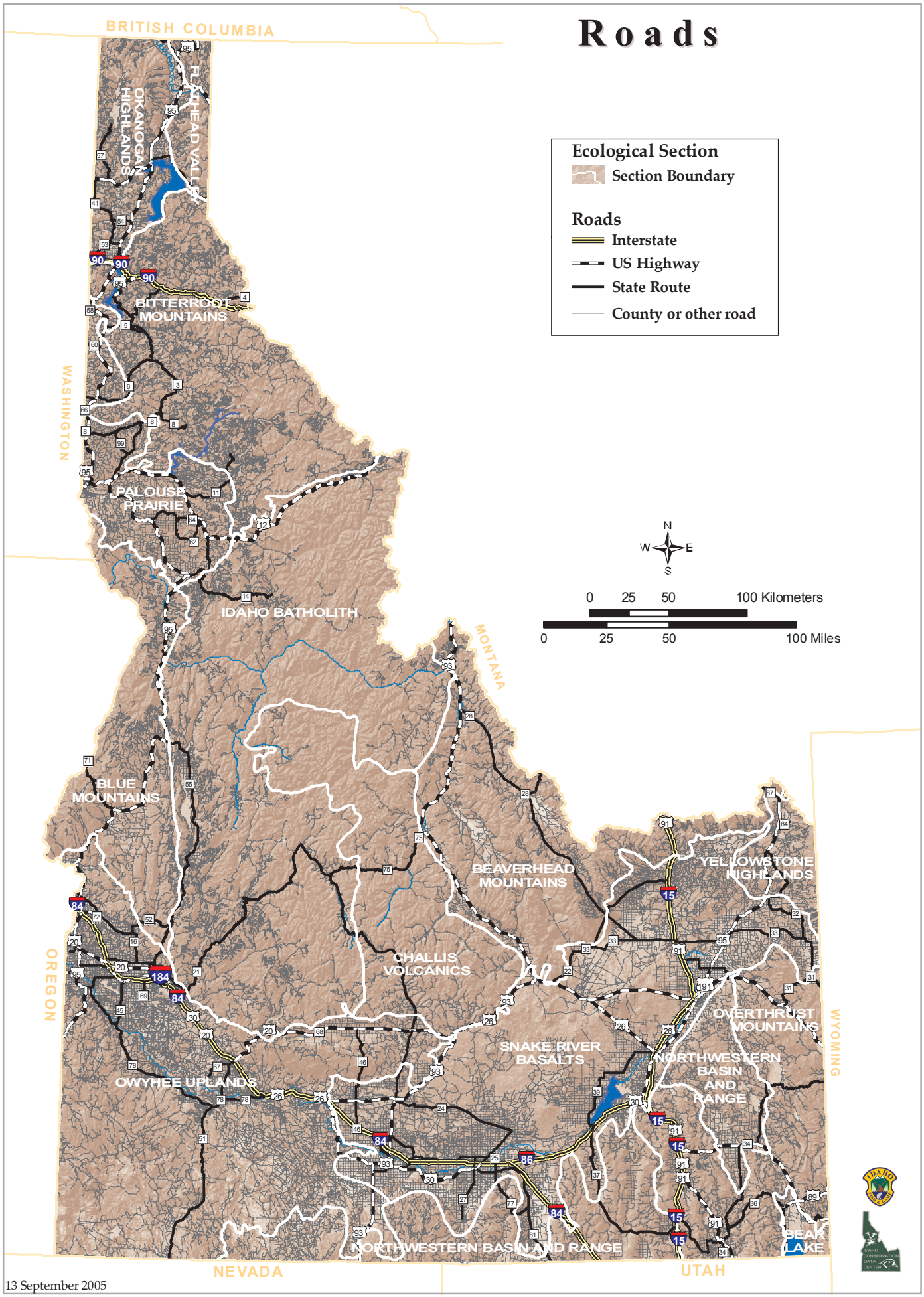

Figure 9. Map of Roads in Idaho.

The **Columbia Plateau Ecoregion** is characterized by a broad expanse of sagebrush covered volcanic plains and valleys, punctuated by isolated mountain ranges and the dramatic river systems of the Snake, Owyhee, Boise and Columbia. Covering 301,329 km^2, the Columbia Plateau stretches across the sagebrush steppe of southern Idaho, connecting the Columbia Basin of eastern Washington and Oregon to the northern Great Basin of Nevada, Utah and California. State representation in the ecoregion is varied with Oregon having the largest percentage of the area at 32%, followed closely by Idaho. Nevada and Washington have similar representations (17–18%) but California, Utah and Wyoming have only minor area within the ecoregion. Four ecological sections are represented in the Idaho portion of this ecoregion: the Palouse Prairie, Owyhee Uplands, Snake River Basalts, and Northwestern Basin and Range (Andelman et al. 1999).

The **Utah–Wyoming Rocky Mountains Ecoregion** includes the mountains just north of Yellowstone National Park in south–central Montana, the Bighorn Mountains in northeast Wyoming, the Uinta Mountains of northeast Utah and Northwest Colorado, Utah's Wasatch Range, and the mountains and valleys of the southeastern corner of Idaho, generally east of Interstate 15. Two ecological sections comprise the Idaho portion of this ecoregion: the Yellowstone Highlands and Overthrust Mountains. Embedded in this vast area is the Greater Yellowstone Ecosystem (GYE), with Yellowstone National Park as its focal point. The GYE is considered one of the last intact temperate ecosystems on Earth, and the farthest south in North America. Yellowstone is an extraordinary place containing the greatest concentration of geysers, hot springs, and other thermal features in the world. Not surprisingly it is a World Heritage Site (Noss et al. 2001).

The **Wyoming Basins Ecoregion** comprises 51,605 square miles (33 million acres or 13.3 million hectares) of basin, plain, desert, and "island" mountains in Wyoming, Montana, Idaho, Colorado, and Utah. Considered by Bailey (1995) as part of the Intermountain Semidesert Province, TNC scientists decided to detach the Wyoming Basins, in part because of the vegetational differences between Wyoming and points west. Although the entire area is dominated by sagebrush species, many of which are common, the Wyoming Basins contains blue grama grass (basically a great plains species), which the Great Basin deserts lack. Rhizomatous grasses like western wheatgrass are more common in Wyoming than in the Great Basin desert. The separation from the Intermountain Province was also made to simplify TNC's ecoregional planning process. The ecoregion is also characterized by unusual rock formations, sand dunes, and saltbush communities. Mountains rising from the basins are timbered with limber pine, Douglas–fir, and stands of aspen. Only one ecological section occurs in the Idaho portion of this ecoregion—Bear Lake–which is home to 4 endemic fish species including Bear Lake whitefish, Bonneville cisco, Bonneville whitefish, and Bear Lake sculpin (Freilich et al. 2001).

Fish and Wildlife Resources

Idaho is home to an assemblage of wildlife as diverse as the landscape it occupies. From the species associated with the mesic forests of the Idaho Panhandle to the wide sagebrush covered Snake River Plain, Idaho is known for its wildlife. There are approximately 1191 native and non–native species (619 vertebrate and 572 selected invertebrate) of wildlife in Idaho (Appendix A). Of these, 94 species (44 fishes, 2 amphibians, 11 birds, 7 mammals, 28 mollusks, 2 butterflies/skippers) have either been introduced or are otherwise non–native to Idaho. In addition, 12 vertebrate and 127 invertebrate species are imperiled rangewide (G1–G3). As of August 2005, 18 Idaho animal species were listed as threatened or endangered under the Endangered Species Act of 1973, as amended. Three more are candidate species and none are currently proposed for listing. Idaho plays an important role in efforts to protect the Nation's rich biological heritage. In the course of developing the Strategy, we identified 229 Species of Greatest Conservation Need in Idaho: 126 vertebrates and 103 invertebrates. A list of these species is provided in Appendix B.

The following table is based on an analysis of 21,395 plant and animal species drawn from the NatureServe Central Databases (Stein 2002). The rankings focused on key biological characteristics including: diversity of species, levels of rarity and risk, endemism, and the number of species already lost to extinction.

Relative Measure of Idaho's Biodiversity[a]

Category	Rank	No. species/% at risk
Species diversity by state	25	3205 species
Risk levels	22	6.7% at risk
Endemism	14	51 species
Extinctions	51	1 species
Vascular plant diversity	16	2438 species
Vascular plant risk	18	7.0% at risk
Mammal diversity	12	105 species
Mammal risk	50	1.0% at risk
Bird diversity	36	284 species
Bird risk	49	0.7% at risk
Reptile diversity	42	23 species
Reptile risk	51	0.0% at risk
Amphibian diversity	48	12 species
Amphibian risk	19	8.3% at risk
Freshwater fish diversity	47	42 species
Freshwater fish risk	10	19.0% at risk

[a] Idaho's biodiversity rank relative to the 50 U. S. States and the District of Columbia (source: Stein 2002).

Land and Resource Management

Table 1. Statewide land use and land ownership.

Land use	Area (ha)	Area (ac)	Percent
Dryland Agriculture	1,767,730	4,368,140	8
Irrigated–Gravity Flow	1,144,307	2,827,633	5
Irrigated–Sprinkler	997,317	2,464,413	5
Rangeland	8,158,798	20,160,749	38
Riparian	241,379	596,459	1
Rock	227,001	560,930	1
Timberland	7,209,007	17,813,773	33
Urban	126,506	312,603	1
Water	154,201	381,038	1
Wilderness	1,606,972	3,970,899	7
	21,633,219	53,456,637	100

Land ownership	Area (ha)	Area (ac)	Percent
USDI Bureau of Land Management	4,880,828	12,060,741	23
USDI Bureau of Indian Affairs	282,317	697,618	1
USDI Bureau of Reclamation	116,883	288,824	1
US Department of Energy	231,379	571,748	1
USDA Forest Service	8,223,889	20,321,592	38
US Department of Defense	52,606	129,991	<1
USDI National Park Service	39,275	97,050	<1
Open water	207,188	511,971	1
Private	6,539,083	16,158,363	30
State of Idaho	1,041,156	2,572,741	5
USDI Fish and Wildlife Service	23,147	57,198	<1
Total	21,637,752	53,467,836	100

Challenges in Wildlife Conservation

Idaho faces many challenges in ensuring that healthy wildlife populations remain for future generations. As the state's population grows, development and transportation systems also increase. Idaho's working farms, ranches, and private forests have long provided homes for fish and wildlife. But many of these areas are being converted into residential developments. Subdivisions and second homes are pushing deeper and deeper into core areas used by wildlife. Transportation systems have to be improved and coupled with development, fragment habitats used by wide–ranging species. State and local governments need to have a strategy for ensuring that wildlife can continue to thrive as Idaho's landscapes change.

With each passing year, it becomes more obvious that noxious weeds and other invasive species are an enormous threat to a wide range of fish and wildlife. Noxious

weeds have already degraded several million acres of Idaho's forests and grasslands. Aquatic invaders, such as Eurasian water milfoil and New Zealand mud snail, are spreading in our waterways. Even more damaging invasives have been found in nearby states. The magnitude of the invasive species threat is still not fully understood by the public, but that is changing. The response of the public and natural resources managers to this threat must improve if strong wildlife populations are to survive in this state.

There is evidence that Idaho's climate has changed and over the next century, climate in Idaho may experience additional changes. The impacts of climate change can affect human health, water resources, agriculture, forests, and ecosytems. Climate change could exacerbate many of the problems facing ecosystems in Idaho.

Management of Wildlife Resources in Idaho

Idaho Department of Fish and Game

The mission of the Idaho Department of Fish and Game (IDFG) is found within the State of Idaho Wildlife Policy, which reads: "All wildlife, including all wild animals, wild birds, and fish, within the state of Idaho, is hereby declared to be the property of the state of Idaho. It shall be preserved, protected, perpetuated, and managed. It shall be only captured or taken at such times or places, under such conditions, or by such means, or in such manner, as will preserve, protect, and perpetuate such wildlife, and provide for the citizens of this state and, as by law permitted to others, continued supplies of such wildlife for hunting, fishing and trapping."

Administratively, the Idaho Department of Fish and Game is divided into regions with offices in Coeur d'Alene, Lewiston, Nampa, Jerome, Pocatello, Idaho Falls and Salmon. In addition, a subregional office in McCall operates in conjunction with the Nampa office. The headquarters office, located in Boise, is organized into bureaus representing Department functions: Administration, Fisheries, Wildlife, Law Enforcement, Communications, Natural Resources, Information Technology, and Engineering. Each bureau is responsible for direction and consistency for programs implemented by regional staff. There are currently 523 full time employees and 384 temporary employees.

Wildlife Management Areas

Since 1940, the Idaho Department of Fish and Game has developed a network of 34 Wildlife Management Areas (WMAs) and 1 Conservation Easement (C. E.) across the state. This program is primarily focused on the the conservation of game species and their habitats. However, in a recent assessment of Idaho's WMAs, Karl et al. (2005) concluded that a system of WMAs established mainly to protect game species potentially conserves many other aspects of Idaho's ecological diversity, may provide for more than 98% of Idaho's wildlife, and complements other protected areas in the state. Summaries of existing WMA plans are listed below. Plans are not available for

the following WMAs or C. E.: Snow Peak, Cecil D. Andrus (formerly Brownlee), Rocking M (C. E.), Payette River, Montour, Roswell Marsh, Boise River, C. J. Strike, Niagara Springs, and Deer Parks.

The **Boundary Creek Wildlife Management Area** (WMA) was acquired by the Idaho Department of Fish and Game (IDFG) using funds provided by the sale of Idaho hunting licenses, tags, and state waterfowl stamps; and the Bonneville Power Administration (BPA). The Boundary Creek property was selected by the IDFG as a site for wildlife habitat restoration and mitigation for various reasons, including the property's location near an area of habitat losses associated with the construction of Albeni Falls Dam and the fact that the original wetland basins appeared to be intact (Cole et al. 1999a).

The **McArthur Lake Wildlife Management Area** (WMA) was acquired to provide waterfowl breeding, nesting and summer–fall use areas to replace marshlands converted to farmland in the nearby Kootenai River Valley. An important aspect of the WMA is providing the public with opportunities for waterfowl and big game hunting, fishing and wildlife viewing. The Department's ownership presently consists of 1207 acres. Other development activities have included long–term maintenance of hay fields to provide both goose brooding pastures and dense nesting cover for upland nesting duck species. More than a half–mile of channels has been excavated along the northwest margin of the reservoir to provide nesting islands for waterfowl (Cole and Hanna 1999b).

The **Pend Oreille Wildlife Management Area** (WMA) is managed by the Department (IDFG) to protect wildlife habitat and to provide public access for hunting, fishing, and other outdoor recreational pursuits. Prior to the construction of Albeni Falls Dam, Lake Pend Oreille fluctuated naturally. Construction of Albeni Falls Dam by the U. S. Army, Corps of Engineers (USACE) began in January, 1951, and regulation of the lake began in June 1952. Areas that were historically flooded for a short period were inundated during the growing season. The higher summer pool inhibited most plant growth and converted these areas to seasonally exposed mud flats. Most of the land included in the Pend Oreille WMA was licensed to the Department by the USACE in 1956 as partial mitigation for wildlife habitat impacted by the construction of Albeni Falls Dam. Habitat management emphasis has primarily been for waterfowl production and protection of wetland areas used by migrating birds in the spring and fall (Cole and Hanna 1999c).

The **Farragut Wildlife Management Area** (WMA) was formerly the site of the Farragut Naval Training Center established by the United States Navy in 1942. After World War II ended, the base was de–commissioned in 1946. Land acquisition by the Department (IDFG) started in 1949. Acquisition was completed in 1950 with a conditional deed stating that the property must be managed for wildlife conservation purposes. The Department acquired the WMA in order to protect white–tailed deer winter range and to provide public boating and fishing access to Lake Pend Oreille. This WMA is unique in Idaho in that the Department has a formal agreement with the Idaho Department of Parks and Recreation (IDPR) for co–management of the property by both agencies. Administrative supervision of the WMA is shared with the IDPR through a Memorandum

of Understanding originally signed in 1966 and later revised in 1982. Wildlife management activities are the responsibility of the Department while the IDPR is primarily responsible for recreation and supervision of public use (Helmich and Hanna 1999).

The **Coeur d'Alene River Wildlife Management Area** (WMA) was created to protect and enhance waterfowl habitat, increase waterfowl production, and provide a secure staging area for migrating waterfowl. An important aspect of the WMA is providing public access for waterfowl and big game hunting, fishing, and wildlife viewing. Habitat management and development emphasis has primarily been for waterfowl production; maintenance of stable water levels through a series of dikes and water control structures; introduction of wild rice as a food source; and creating islands and open water in dense strands of horsetail rush. IDFG has been granted water rights licenses to impound water and control water levels in many of the wetlands on the WMA to provide maximum benefits for fish and wildlife resources (Nigh and Hanna 1999a).

The **St. Maries Wildlife Management Area** (WMA) was acquired primarily between 1941 and 1947, making this WMA one of the oldest in Idaho. Two additional purchases were completed in 1963 and 1978. The land was purchased by the Department to provide public hunting and fishing opportunity and winter range for elk, white–tailed deer and mule deer. Past management activities have been directed towards opening portions of the forest canopy to create additional winter range for big game. Timber sales have been used to create small clearcuts subsequently broadcast burned to promote the regeneration of desirable browse plants (Nigh and Hanna 1999b).

The **Craig Mountain Wildlife Management Area** (CMWMA) is comprised of two primary management units. The Billy Creek Unit was purchased by the Idaho Department of Fish and Game (IDFG) between 1971 and 1983. This land was acquired by lDFG to provide critical habitat for wildlife (primarily elk and deer) and recreation access for hunters and anglers along the Snake River. The area was expanded in 1995, with acquisition of the Peter T. Johnson Wildlife Mitigation Unit. It was provided to the State of Idaho as partial mitigation for wildlife losses associated with the 1971 inundation of wildlife habitat along the North Fork Clearwater River resulting from construction of Dworshak Reservoir. lDFG combined management of these adjacent units in 1996. The CMWMA is characterized by gently rolling forested plateau at higher elevations, surrounded by deeply dissected canyon grasslands along the breaks of the Salmon and Snake rivers (Rybarczyk and McNeill 1998).

The **Red River Wildlife Management Area** (RRWMA) was purchased in September 1993. The former owner offered to sell the property, formerly known as Little Ponderosa Ranch, to the Idaho Department of Fish and Game (Department) so that it would be preserved in a natural state, the area's fish and wildlife resources would be protected, and the property would remain undeveloped for recreational home sites. The IDFG was interested in the Little Ponderosa Ranch for three main reasons: (1) the meadow provides calving habitat for 20–40 cow elk each year, and 100–200 elk use the meadow for foraging during spring green up; (2) the Red River runs through the

property and contains historical spawning habitat for spring Chinook salmon; (3) a large ranch house is located on the property and can be used as a meeting facility, work cabin, and a center for teaching environmental education. These three primary reasons for purchasing the property helped to guide the development of the management direction identified within this plan (White 1999).

Fort Boise Wildlife Management Area (WMA) is a wetland/upland riparian habitat that includes a 330–acre island in the Snake River which was deeded to the Department in 1956 by Idaho Power Company as partial compensation for habitat lost by the construction of Brownlee Dam. The goal of habitat managers on these lands is to provide a mix of quality wetland and upland habitats for diverse wildlife production and wildlife–related recreation. Primary management objectives include providing waterfowl, upland bird, and nongame wildlife populations and habitat. Providing compatible consumptive and non–consumptive wildlife–related recreation is also a primary management objective. To ensure that stakeholders are an integral part of the management process and to keep this plan relevant, periodic public meetings will be held and surveys will be taken to monitor the quality of the recreation and outdoor experience on the WMA (Kofoed 2003).

Camas Prairie Centennial Marsh Wildlife Management Area (Centennial Marsh) was acquired between 1987 and 1989 by the IDFG and provides aquatic and upland habitats for breeding, nesting and feeding waterfowl and shorebirds. Centennial Marsh is a seasonally flooded wetland that attracts large numbers of waterfowl and other water–based birds. Many of these birds stay on the area to nest and raise broods. The seasonality of the water creates a shortage of brood–rearing habitat. To alleviate this problem, 18 2.5–acre brood ponds and a well–water delivery system were constructed. The primary purpose of Centennial Marsh is to provide quality wetland and upland habitat to meet the needs of migratory and resident wildlife resources. This will be accomplished through protection and restoration of the Centennial Marsh wetlands. Centennial Marsh will also provide quality recreational opportunities consistent with the primary purpose (Gregory et al. 1999a).

Carey Lake Wildlife Management Area (CLWMA) was first acquired by the IDFG in 1949 from the Carey Lake Reservoir Company. Additions to CLWMA were purchased from several sources between 1951 and 1957. CLWMA provides an important stop–over site for migrating waterfowl and shorebirds as well as breeding and brood–rearing habitat for resident birds. CLWMA receives considerable use from fisherman, early–season waterfowl hunters and bird watchers. The primary purpose of CLWMA is to provide quality wetland habitat to meet the needs of migratory and resident wetland wildlife resources. A second purpose is to provide quality recreational opportunities consistent with the primary purpose (Gregory et al. 1999b).

The **Billingsley Creek Wildlife Management Area** (BCWMA) was purchased from the McCarter Cattle Company, Inc., in September 1963. The area is traversed by a 1.25–mile section of Billingsley Creek and supports wildlife habitat for upland game, waterfowl, mule deer and other species. BCWMA is a small management area that

provides hunting, fishing, trapping and other wildlife related activities. The management emphasis at BCWMA will be on providing waterfowl habitat as mitigation for the loss of waterfowl habitat at Hagerman Wildlife Management Area (HWMA). Waterfowl habitat within HWMA was sacrificed to provide spring fishing opportunity (Goren et al. 1999b).

Land acquisition for the **Hagerman Wildlife Management Area** (HWMA) began in 1940 with 423.47 acres. HWMA now consists of 880 acres including 223 acres licensed from the USDI Fish and Wildlife Service (a mostly dry land portion of the Hagerman National Fish Hatchery). Sixteen ponds are located at HWMA. Spring–water flows through HWMA and is 14°C (58°F). The springs provide open water for approximately 50,000 ducks and 4,000 Canada geese during the winter. Predominantly, mallard winters on HWMA, but many waterfowl species are present. Because of the sanctuary provided by HWMA, some waterfowl delay migration, while a portion of the population are yea–round residents. HWMA provides opportunities to hundreds of fishermen each year, and the March 1st opening on a portion of HWMA is popular with fishermen. This early fishing opener conflicts with waterfowl production goals. HWMA management goals include providing secure winter habitat for approximately 50,000 waterfowl, maintaining waterfowl production, maintaining upland game habitat, providing fishing opportunities, and providing consumptive and non–consumptive public benefits (Gorgen et al. 1999c).

The **Big Cottonwood Wildlife Management Area** (BCWMA) was purchased by the Idaho Department of Fish and Game (Department) in 1993 for fish and wildlife conservation and federal land access. Prior to BCWMA's purchase, the property was privately owned and operated as a cattle ranch and farm for nearly 110 yr. The property was sought by the Department because the area provided important habitats for reintroduced California bighorn sheep, transplanted Rio Grande wild turkey, and one of the few remaining populations of native Yellowstone cutthroat trout. In addition, the acquisition secured public access to thousands of acres of adjacent federal lands. To date, management emphasis on BCWMA has focused on restoring and rehabilitating habitats for a variety of wildlife species. Original management priorities included improving upland habitats for bighorn sheep and riparian/wetland habitats in Big Cottonwood Creek for cutthroat trout (Gorgen et al. 1999a).

The **Sterling Wildlife Management Area** (SWMA) is a partnership between the Idaho Department of Fish and Game (Department) and the Bureau of Reclamation (BOR). The SWMA is managed to provide public access and diverse wetland and upland vegetation types for wildlife. This management improves waterfowl, ring–necked pheasant and other wildlife production, public hunting, and general wildlife appreciation. The Department manages the vegetation on SWMA for the benefit of wildlife and the public. Habitat improvements are to be made, through the use of cooperative farming agreements, wherever possible. Noxious weed control is a top priority, as are a variety of outreach efforts to improve relationships with WMA neighbors. Public access to the WMA will be improved as opportunities become available and the pheasant release program will continue, in some form, as long as the Fish and Game Commission authorizes the funding. Predator populations are controlled and monitored to balance the impacts on ground–nesting birds, particularly waterfowl. Nongame programs will be

funded appropriately. Land purchases will be made whenever opportunities arise that meet guidelines (Rose 1999).

The primary management objective of the **Portneuf Wildlife Management Area** (PWMA) is to maintain and/or improve deer winter range. Access for hunting, trapping and wildlife viewing on PWMA will be maintained as possible without compromising wildlife habitat values. The mission of the PWMA is to enhance mule deer winter range and sharp–tailed grouse habitat through vegetation management; to benefit wildlife and fish by maintaining optimal successional stage and vegetation type diversity while improving plant vigor; and to provide opportunities for nonconsumptive and consumptive wildlife–based recreation that are compatible with maintaining high quality wildlife and fish habitat (Deal 1999d).

The **Blackfoot River Wildlife Management Area** (BRWMA) was purchased from The Conservation Fund. Management will focus on restoration of native plant communities for wildlife habitat and improvement of cutthroat trout habitat. Access for hunting, fishing and wildlife viewing on BRWMA will be maintained as possible without compromising wildlife habitat values. The mission of the BRWMA is to enhance wildlife and cutthroat trout habitat and provide opportunities for wildlife and fisheries related recreation. Big game, upland game, waterfowl, furbearer and nongame habitat needs will be considered in management of the area. Needs of nongame and sensitive species will be evaluated before vegetation manipulations are implemented to benefit game species. Grazing management is an integral part of this plan. Motorized vehicles will be restricted to established roads. A working group of neighboring landowners, other agencies and interested parties has been established to address management issues on BRWMA. Weed control, boundary marking, fence maintenance and a potential land–use trade agreement will also contribute to this effort (Deal 1999a).

The **Georgetown Summit Wildlife Management Area** (GSWMA) is one of the properties managed by the Idaho Department of Fish and Game (Department) to provide wildlife habitat and wildlife related recreation. The primary management objective is deer and elk winter range. Access for hunting, trapping and wildlife viewing on BSWMA is maintained as possible without compromising wildlife habitat values. The mission of the GSWMA is to enhance elk and mule deer winter range and sharp–tailed grouse habitat through vegetation management; maintain optimal successional stage and vegetation type diversity while improving plant vigor for the benefit of wildlife and fish; and provide opportunities for non–consumptive and consumptive wildlife–based recreation that is compatible with maintaining high quality wildlife and fish habitat. Upland game, waterfowl and nongame habitat needs will also be considered in management of the area. Needs of nongame and sensitive species will be evaluated before vegetation manipulations are implemented to benefit game species. Under Department management, these lands are also protected from future development (Deal 1999b).

Montpelier Wildlife Management Area (MWMA) is managed by the Idaho Department of Fish and Game (Department) to provide wildlife habitat and wildlife related recreation.

The major management objective is deer and elk winter range. Access for hunting, trapping and wildlife viewing on MWMA will be maintained as possible without compromising wildlife habitat values. The mission of the MWMA is to enhance mule deer winter range through vegetation management; to benefit wildlife and fish species by maintaining optimal successional stage and vegetation type diversity while improving plant vigor; and to provide opportunities for non–consumptive and consumptive wildlife–based recreation that is compatible with maintaining high quality wildlife and fish habitat. Long–term progress toward fostering good relationships with neighbors is planned by establishing and maintaining boundary markings and fences, controlling noxious weeds, and establishing a working group of neighbors and interested area users (Deal 1999c).

The **Tex Creek Wildlife Management Area** (TCWMA) was originally acquired to provide mitigation by the Bureau of Reclamation (BOR) and the Army Corps of Engineers for big game winter range losses. These losses resulted from Teton and Ririe Dams construction, impoundment, and flooding and the subsequent damage caused by the failure of the Teton Dam. The area now consists of lands owned by the BOR, the Bureau of Land Management (BLM), and Idaho Department of Fish and Game (IDFG). IDFG has primary management responsibility. The properties chosen for acquisition for the TCWMA had a long history of big game winter use. At the time of acquisition, the Indian Fork and Pipe Creek areas wintered 1400 elk. Wintering deer were so numerous in Willow Creek Canyon that biologists had named one area Deer Heaven. The acquisition and cooperative management of these properties has ensured that these herds of big game animals would continue to have winter range (Thomas 1999).

The 5071–acre **Market Lake Wildlife Management Area** (MLWMA) was established in 1956 to restore a portion of the historic Market Lake basin for migrating and nesting waterfowl, and to provide an area for waterfowl hunting. The original Market Lake was a 12–mi² flood plain of the adjacent Snake River. The vast flocks of waterfowl that visited Market Lake during the spring and fall migrations attracted “market” hunters who harvested the birds and gave the area its name. In 1956, when the MLWMA was established, only 30 acres of the original wetlands remained. The management plan for the MLWMA was developed with input from the public and Department (IDFG) personnel. The plan lists the management priorities for the MLWMA, based upon public and Department input during the scoping process. The direction of work toward meeting goals and objectives will be guided by the management priorities (Kemner and Sands 1999).

The **Sand Creek Wildlife Management Area** (SCWMA) was created in 1947 with the acquisition of Chapman Ranch, 17 miles north of St. Anthony. This 4763 acre parcel of private land was purchased to perpetuate the small herd of elk that wintered on the property. From this beginning, the primary focus of the SCWMA has been to provide winter range in sufficient quantity and quality to support the Sand Creek elk herd during the winter months. The current planning effort at SCWMA is being done to ensure long–term protection of fish and wildlife resources on Department property within biological limits, economic, social, and manpower constraints (Aslett and Owsiak 1999).

Cartier Slough Wildlife Management Area (CSWMA) was purchased by the Army Corps of Engineers (ACE) and the Bureau of Reclamation (BOR) in 1976 and 1977, respectively, as mitigation for wetland/waterfowl losses resulting from construction of Ririe and Teton Dams. The management of the property was transferred to the Idaho Department of Fish and Game (the Department) by agreements with the ACE and BOR. CSWMA is managed primarily as habitat for waterfowl. However, it provides habitat for a variety of wildlife species. CSWMA is also managed to provide public access for hunting, fishing, trapping, and wildlife viewing (Wackenhut and Ragotzkie 1999a).

The management plan for the **Mud Lake Wildlife Management Area** (MDWMA) helps to ensure long–term protection and management of fish and wildlife resources on IDFG property within biological limits, economic, social, and manpower constraints. A key element of wildlife management involves managing land and water—the habitat base required for all fish and wildlife species. Providing public access for hunting, fishing, trapping, or simply viewing wildlife is also an integral part of wildlife management. The Department developed the MDWMA management plan with input from the public to identify issues important to users of MDWMA. As new information and technology become available, this plan may be amended. All goals, objectives, and strategies for the MDWMA are dependent on available funding, personnel, and public support (Maeder 1999).

The **Gem State Wildlife Habitat Area** (GSWHA) is made up of 71 acres of riparian habitat, most of which is the offsite mitigation area for losses resulting from the development of the Gem State Hydroelectric facility by the City of Idaho Falls. An additional 19 acres of the Area is owned by BLM and has been fences with and is managed as part of the mitigation area to enhance wildlife habitat. GSWHA is managed primarily as wildlife habitat. GSWHA is also managed to provide public access for hunting, fishing, trapping and wildlife viewing. The parcel, including the BLM property, has 63.7 acres of forested riparian habitat, including some mature cottonwoods. There are approximately 7 acres of palustrine emergent wetland on the BLM owned lands (Wackenhut and Ragotzkie 1999b).

Hatcheries

The Idaho Department of Fish and Game operates 19 fish hatcheries statewide. Twelve of these raise fish that stay in fresh water all of their lives (resident fish) and the remaining 8 hatcheries raise salmon and steelhead that spend part of their lives in the ocean. The resident fish hatcheries are all funded by license monies. Their job is to provide catchable rainbow trout, cutthroat trout and other fish for the angler.

The Idaho Power Company and others fund the salmon and steelhead hatcheries as mitigation for the construction of dams that block migration of salmon and steelhead to and from the ocean. Their purpose is to provide fish for anglers and most of the fish they stock are marked so the angler can tell them apart from wild salmon and steelhead.

Funding for Wildlife Conservation on Private Lands

The **Idaho Landowner Incentive Program (LIP)** is a voluntary incentive program that assists private landowners to implement conservation practices on their property that will benefit species at risk. Administered by the Idaho Department of Fish and Game, the Idaho LIP consists of a Statewide Coordinator, a Statewide Fish Habitat Biologist and 2 Conservation Planners. The focus of the Idaho LIP program is to identify areas in need of special projects, to provide private landowners with technical assistance to develop conservation based projects, to help them write proposals, and to find appropriate funding sources. As of 2005, Idaho does not have a LIP fund to implement projects on private land that will benefit species of greatest conservation need.

IDFG's Key Conservation Partners

Federal Agencies

The **U. S. Fish and Wildlife Service** is the principal federal agency responsible for conserving, protecting and enhancing fish, wildlife and plants and their habitats for the continuing benefit of the American people. The Service manages the 95–million–acre National Wildlife Refuge System, which encompasses 544 national wildlife refuges, thousands of small wetlands and other special management areas. It also operates 69 national fish hatcheries, 63 Fish and Wildlife Management offices and 81 ecological services field stations. The agency enforces federal wildlife laws, administers the Endangered Species Act, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat such as wetlands, and helps foreign governments with their conservation efforts. It also oversees the Federal Assistance program, which distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

National Wildlife Refuges

Bear Lake National Wildlife Refuge is located 7 miles southwest of Montpelier, ID, and consists of 19,000 acres of marsh, open water, and grasslands at an elevation of 5900 feet in the mountain–ringed Bear Lake Valley. The Refuge is especially important as a nesting area for white–faced ibis, Canada goose and redhead. The Refuge also serves as a nesting, resting and feeding area for other ducks, greater sandhill crane, and a variety of water and shorebirds. North Beach State Park is located on the south boundary of the Refuge, and several U. S. Forest Service campgrounds are located along the west side of the valley (USFWS 2005a).

Located near Hamer, ID, **Camas National Wildlife Refuge** provides nesting, resting, and feeding areas for ducks, geese, trumpeter swan, and songbirds. Moose, mule deer, and white–tailed deer are also present on the Refuge. Habitat in the area consists of 10,578 acres of marshes, meadows, and uplands (USFWS 2005b).

Deer Flat National Wildlife Refuge, established in 1909, is one of the nation's oldest refuges. Located southwest of Boise, Idaho, the refuge includes the Lake Lowell sector (10,588 acres) and the Snake River Islands sector (about 800 acres). Lake Lowell is an irrigation project reservoir that provides an oasis for wildlife in this arid region. The late–summer drawdown of the lake reveals mud flats that provide food for a variety of resident and migratory wildlife. Historic wintering waterfowl populations averaged over 300,000 birds (USFWS 2005c).

Grays Lake National Wildlife Refuge is approximately 27 mi north of Soda Springs, ID. The largest nesting population of greater sandhill crane in the world is found here. The Refuge is also a nesting area for Canada goose and a variety of diving and dabbling ducks. Franklin's gull nests in large colonies and may reach nearly 40,000 in some years. These colonies also attract large numbers of nesting white–faced ibis. The Refuge consists of 18,330 acres of high mountain marsh at the foot of Caribou Mountain (USFWS 2005e).

Kootenai National Wildlife Refuge is located in Idaho's Panhandle approximately 20 mi south of the Canadian border and 5 mi west of Bonners Ferry, Idaho. This 2774 acre refuge was established in 1965, primarily to provide important habitat and a resting area for migrating waterfowl. The Refuge is comprised of a wide variety of habitat types. Wetlands, meadows, riparian forests and cultivated agricultural fields (for producing valuable wildlife food crops) are interspersed in the valley bottom adjacent to the west banks of the Kootenai River. The western portion of the refuge ascends the foothills of the scenic Selkirk Mountains and consists of dense stands of coniferous trees and riparian forests (USFWS 2005f).

Minidoka National Wildlife Refuge consists of 20,721 acres, including 11,000 surface acres of Lake Walcott, which is created by the Bureau of Reclamation's Minidoka Dam. An abundance of aquatic vegetation is found in small bays and inlets of the lake. Surrounding uplands are typical sagebrush and grassland. Up to 100,000 ducks and geese are present during spring and fall migrations. Migrating tundra swan can be seen in the spring in shallow bays and shores of the lake. Bald eagle, golden eagle, hawks, and owls are frequently seen. Mule deer are year–round residents and pronghorn are occasionally seen. Lake Walcott State Park is located within the refuge boundary and is managed by the Idaho Department of Parks and Recreation (USFWS 2005g).

Oxford Slough National Wildlife Refuge is located 10 mi northwest of Preston, ID, and consists of 1878 acres of marshes, meadows and uplands. The Refuge serves as an especially important nesting area for redhead, as well as other nesting ducks. A variety of waterbirds, including a colony of white–faced ibis, are also found at the Refuge (USFWS 2005h).

The **Bureau of Land Management (BLM)**, an agency within the U. S. Department of the Interior, administers 261 million surface acres of America's public lands, located primarily in 12 western states. The BLM sustains the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. Within

Idaho, Bureau of Land Management lands are scattered over much of the state, but most encompass much of southern Idaho's sagebrush–steppe habitat. The BLM has 13 districts within Idaho and their state headquarters is in Boise.

The **National Park Service** manages a growing list of national parks, monuments, and historic sites. The National Park Service Organic Act of 1916 charges the National Park Service with a dual mandate of protecting and regulating the use of the national parks "by such means and measures as conform to the fundamental purpose to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment for the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

City of Rocks National Reserve is located in southern Cassia County in Idaho. Beginning in 1843, City of Rocks was a landmark for emigrants on the California Trail and Salt Lake Alternate Trail and later on freight routes and the Kelton, Utah to Boise, Idaho stage route. The area's historical and geological values, scenery, and opportunities for recreation led to its designation as City of Rocks National Reserve in 1988. This unit of the National Park System is managed cooperatively by the National Park Service and the Idaho Department of Parks and Recreation (USDI National Park Service 2005a).

Craters of the Moon National Monument and Preserve is located in the eastern Snake River Plain crossing southern Idaho and contains three young lava fields covering almost half a million acres. In 1924, the National Park Service began the job of protecting the park and welcoming people to experience this area. In 2000, the Monument was expanded to include most of the Great Rift, the source of the lava flows that created this unique landscape. Today's more than 750,000–acre National Monument and Preserve is co–managed by the National Park Service and the Bureau of Land Management (USDI National Park Service 2005b).

Hagerman Fossil Beds National Monument is located approximately 30 mi southeast of Twin Falls, ID, and contains the largest concentration of Hagerman Horse fossils in North America. The Monument is also internationally significant because it protects the world's richest known fossil deposits from a time period called the late Pliocene epoch, about 3–4 million years ago. Over 200 species of plants and animals have been found here. These represent the last glimpse of time that existed before the Ice Age, and the earliest appearances of modern flora and fauna (USDI National Park Service 2005c).

The 38 sites of **Nez Perce National Historical Park** are scattered across the states of Idaho, Oregon, Washington, and Montana and have been designated to commemorate the stories and history of the Nimiipuu and their interaction with explorers, fur traders, missionaries, soldiers, settlers, gold miners, and farmers who moved through or into the area. Nez Perce National Historical Park was established as a unit of the national park system on May 15, 1965, by Public Law 89–19. The law specifies the park was created to "facilitate protection and provide interpretation of sites in the Nez Perce Country of Idaho that have exceptional value in commemorating the history of the Nation." The

park is a focal point for current Nez Perce culture and allows for the continued traditional use of resources (USDI National Park Service 1997).

Yellowstone National Park, spans 2,219,791 acres of land in Idaho, Montana, and Wyoming. Long before any recorded human history in Yellowstone, a massive volcanic eruption spewed an immense volume of ash that covered all of the western U. S., much of the Midwest, northern Mexico and some areas of the eastern Pacific. That climactic event occurred about 640,000 years ago, and was one of many processes that shaped Yellowstone National Park. Geothermal wonders, such as Old Faithful, are evidence of one of the world's largest active volcanoes. These spectacular features bemused and befuddled the park's earliest visitors, and helped lead to the creation of the world's first national park. In 1872, President Ulysses S. Grant signed a law declaring that Yellowstone would forever be "dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of the people."

The **USDA Forest Service** manages public lands in national forests and grasslands. Gifford Pinchot, the first Chief of the Forest Service, summed up the mission of the Forest Service "to provide the greatest amount of good for the greatest amount of people in the long run." National forests and grasslands encompass 193 million acres of land, which is an area equivalent to the size of Texas. There are ten regional areas of the Forest Service in the U. S. Idaho contains portions of both the Northern Region (R1) and the Intermountain Region (R4), which are represented by 13 National Forests.

The **U. S. Department of Defense** manages a comprehensive inventory of installations and facilities to ensure that the Nation has all the assets necessary to keep Americans safe. The Department’s physical plant is huge by any standard, consisting of more than 600,000 individual buildings and structures located at more than 6,000 different locations or sites. When all sites are added together, the Department uses over 30 million acres of land. Department of Defense sites in Idaho include Gowen Field Air National Guard Base, Mountain Home Air Force Base, and Saylor Creek Air Force Range.

The **Idaho National Laboratory** (INL) is operated for the **U. S. Department of Energy’s Office of Nuclear Energy**, Science and Technology by Battelle Energy Alliance. In operation since 1949, the INL is a government reservation located in the southeastern Idaho desert and contains 890 square miles (569,135 acres) of land. It was established in 1949 as the National Reactor Testing Station and for many years was the site of the largest concentration of nuclear reactors in the world. During the 1970s, the laboratory's mission broadened into other areas, such as biotechnology, energy and materials research, and conservation and renewable energy. At the end of the Cold War, waste treatment and cleanup of previously contaminated sites became a priority. Today, INL’s National and Homeland Security Division performs essential research, delivers critical technology solutions, and provides indispensable prototyping and testing services to identify and defeat threats to the security of the nation.

The INL is more than a remote location to test reactors and build large projects. The varied wildlife and plant life of its high–desert terrain, the site is protected from outside intrusion, make it an ideal location to study nature. In 1975, the INL became the nation's second largest National Environmental Research Park. This designation has allowed the INL to serve as an outdoor laboratory for environmental scientists to study Idaho's native plants and wildlife in an intact and relatively undisturbed ecosystem. INL land consists of flat to gently rolling, high–desert terrain that lies about 5 000 feet above sea level. About 94% of the land is undeveloped and is home to more than 269 vertebrate species, including 47 mammals, 210 birds, 11 reptiles, and 1 amphibian. More than 400 species of plants have been identified. The INL also provides essential habitat for several game species, such as pronghorn, elk, and greater sage–grouse (U. S. Department of Energy 2005a).

The **USDI Bureau Of Reclamation** (BOR) is best known for the dams, powerplants, and canals it constructed in the 17 western states. These water projects led to homesteading and promoted the economic development of the West. The BOR has constructed more than 600 dams and reservoirs including Hoover Dam on the Colorado River and Grand Coulee on the Columbia River. Today, the BOR is the largest wholesaler of water in the country, bringing water to more than 31 million people, and providing 1 out of 5 western farmers (140,000) with irrigation water for 10 million acres of farmland that produce 60% of the nation's vegetables and 25% of its fruits and nuts. The BOR is also the second largest producer of hydroelectric power in the western United States. Today, the BOR is a contemporary water management agency with a strategic plan that outlines numerous programs, initiatives and activities that will help the Western States, Native American Tribes and others meet new water needs and balance the multitude of competing uses of water in the West (USDI Bureau of Reclamation 2005d).

Boise Project: The Reclamation’s Boise Project provides water from Anderson Ranch Reservoir for residential and industrial use in the Boise valley. Arrowrock Dam, a 350–foot–high structure, was the highest concrete dam in the world when it was completed in 1915.

Minidoka Project: The Reclamation’s Minidoka Project involves the cooperation of Idaho, Wyoming, and the Reclamation to provide the most efficient uses of Snake River water and to equitably divide the water between the two states. American Falls Reservoir is the project’s largest storage reservoir and holds up to 1.7 million acre–feet of water. (USDI Bureau of Reclamation 2005b).

Palisades Project: The Reclamation’s Palisades Project includes Palisades Dam, Reservoir, and Powerplant on a 5200–square–mile drainage basin. The project transformed an area plagued by droughts and floods into an area with a dependable water supply. Idaho, Wyoming, and the Reclamation cooperate in providing the most efficient uses of Snake River and Palisades Reservoir water (USDI Bureau of Reclamation 2005c).

The **USDA Natural Resources Conservation Service (NRCS)** is the primary federal agency providing on–the–ground technical assistance. NRCS also administers many conservation programs (e.g., Wetlands Reserve Program and Conservation Reserve Program) that assist private landowners in the protection of their natural resources. The NRCS emphasizes voluntary, science–based conservation technical assistance, incentive–based programs, and cooperative problem solving at the community level while working to improve and conserve soil, air, and water quality. They continually strive to provide for productive agriculture and effective conservation.

The **U. S. Army Corps of Engineers** is a federal agency that provides engineering services to federal agencies. Among the diverse responsibilities of the USACE are planning, designing, building, and operating water resources and other civil works projects, such as projects addressing navigation, flood control, and environmental protection.

State Agencies

The **Idaho Department of Lands** manages endowment trust lands to maximize long–term financial returns to the beneficiary institutions (Public Schools, the Agricultural College Fund [University of Idaho], Charitable Institutions Fund [Idaho State University, Industrial Training School, State Hospital North, Idaho Veterans Homes and the School for the Deaf and Blind], Normal School Fund [Idaho State University Department of Education and Lewis–Clark State College], the Penitentiary Fund, the School of Science Fund [University of Idaho], State Hospital South Fund, the University Fund [University of Idaho] and the Capitol Commission) and provides protection to Idaho's natural resources.

The **Idaho Department of Parks and Recreation** manages 30 state parks and runs the registration program for snowmobiles, boats and off–highway vehicles. Money from registrations and other sources goes to develop and maintain trails, facilities and programs statewide for the people who use those vehicles. The agency manages a series of outdoor recreation grant programs that provide facilities and services to a wide variety of recreationists and the local governmental and nongovernmental organizations that serve them.

The **Idaho Department of Environmental Quality** (DEQ) is a state department created by the Idaho Environmental Protection and Health Act (Idaho Code §39–101 et seq) to ensure clean air, water, and land in the state and to protect Idaho citizens from the adverse health impacts of pollution. As a regulatory agency, DEQ enforces various state environmental regulations and administers a number of federal environmental protection laws including the Clean Air Act, the Clean Water Act, and the Resource Conservation and Recovery Act.

The primary purposes of the **Idaho State Department of Agriculture (ISDA)** are to protect Idaho's crops and livestock from the introduction and spread of pests and transmittable diseases, to help provide the industry with a system for the orderly

marketing of agricultural commodities, and to protect consumers from contaminated products or fraudulent marketing practices. The Idaho State Department of Agriculture has an important place in one of the state's largest industry sectors and recognizes that Idaho's economic well–being is forever tied to the health of its farming and ranching. ISDA also recognizes that new opportunities exist that will redefine the future of agriculture in Idaho. As agriculture changes, ensuring efficient and superior service delivery will continue to be the department's foremost priority.

Tribal Lands and Governments

Tribal Governments of Idaho (Coeur d' Alene, Kootenai, Nez Perce, Northwestern Band Shoshoni Nation, Shoshone–Bannock and Shoshone–Paiute). All federally recognized tribes in the United States are sovereign in their own lands, meaning that tribes were recognized as sovereign before the United States constitution was written. Through treaties and executive orders, tribes have a legal underpinning in the ongoing and difficult effort to keep their cultures, traditions, languages, customs and jurisdictions alive. Members of any tribal council have unique responsibilities that include maintaining a government–to–government relationship with federal and state governments after, first and foremost, responding to the needs and issues of tribal membership. Land and environmental issues are important to all 6 Idaho tribes, which each have a chairman or chairwoman and a tribal council that are elected by tribal members to represent the tribe and make legislative decisions. Tribes and tribal governments remain committed to the preservation of their heritage and to controlling their destinies.

Idaho's Local Government Agencies and Programs

Serving as a non–regulatory agency, the **Idaho Soil Conservation Commission (ISCC)** is an effective liaison, bringing together natural resource leadership, support, and services from local, state, and federal partners for the benefit of landowners and water users across the state. ISCC works closely with Idaho's 51 Conservation Districts—providing assistance, training and funding to further facilitate the wise use and enhancement of soil, water, and other natural resources.

The Idaho Association of Soil Conservation Districts (IASCD) is a voluntary organization of Idaho's 51 Soil (and Water) Conservation Districts. The Association gives a unified voice to the Conservation Districts, helping to direct and coordinate them in the implementation of programs that protect and conserve soil, water, and other renewable resources. As cooperators in the management of Idaho's natural resources, the Association and its Conservation Districts actively promote conservation at the local level, endeavoring to engage public interest and participation in beneficial resource management practices.

Idaho's **Resource Conservation and Development Association** coordinates and unifies local RC&D Councils as they provide proactive leadership and service to the individuals and groups working in their RC&D area. RC&D Councils implement

programs designed to improve the quality of life through resource conservation and development for the residents of their RC&D area. They encourage and educate volunteer, locally elected, and civic leaders in designated RC&D areas to plan and carry out projects related to land conservation, community development, and land and water management. The RC&D Association's activities are centered on ideas of sustainable communities, prudent land use, and the sound management and conservation of natural resources.

The **Idaho Association of Soil Conservation Districts Auxiliary**, the first auxiliary formed of any state association of conservation districts in the U. S., continues to be a progressive body of support for the grassroots conservation movement in Idaho. The Auxiliary promotes soil conservation by lending their support to Conservation Districts and facilitating educational presentations and programs.

Conservation Organizations

The Nature Conservancy is dedicated to preserving the plants, animals, and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. The Conservancy has more than 1.1 million individual members, including 4500 members in Idaho. The Conservancy currently has programs in all 50 states and in 30 other nations. The Nature Conservancy focuses on practical conservation projects that make a difference on the ground. They believe in working cooperatively with landowners, communities, and land managers so that wildlife conservation is supported by people who make their living from the land. Where appropriate, The Conservancy seeks financial incentives to make it possible for landowners to protect natural areas important for wildlife.

NatureServe is a non–profit conservation organization that provides the scientific information and tools needed to help guide effective conservation action. NatureServe and its network of natural heritage programs are the leading source for information about rare and endangered species and threatened ecosystems. NatureServe represents an international network of biological inventories—known as natural heritage programs or conservation data centers—operating in all 50 U. S. states, Canada, Latin America and the Caribbean. Together they not only collect and manage detailed local information on plants, animals, and ecosystems, but develop information products, data management tools, and conservation services to help meet local, national, and global conservation needs. The objective scientific information about species and ecosystems developed by NatureServe is used by all sectors of society—conservation groups, government agencies, corporations, academia, and the public—to make informed decisions about managing natural resources.

Land Trusts

The **Clark Fork–Pend Oreille Conservancy** works cooperatively within the Clark Fork–Pend Oreille watershed to protect, maintain and enhance natural resource and recreation values that contribute to our quality of life. With increasing pressure from

development, it is even more important to protect open spaces, fish and wildlife corridors, recreation areas, and sustainable agriculture/timber practices. The land trust has formed to meet the need for land conservation specifically in the lower Clark Fork River and Lake Pend Oreille area Bonner County, Idaho, and western Sanders County, Montana.

The **Idaho Foundation for Parks and Lands** seeks to identify, acquire/accept, hold and sometimes transfer interests in lands to political entities with the State of Idaho; and to render public benefit in preserving and caring for these lands. Managed by a Board of Directors, all private citizens, the Foundation protects and enhances Idaho land. In the reality of today's world there are not enough tax dollars to go around. A land preservation organization such as the Idaho Foundation for Parks and Lands can be the conduit to channel monies for the acquisition and management of lands and not forfeit once only lifetime opportunities.

Established in 1991, the **Inland Northwest Land Trust (INLT)** is a local, non–profit, non–political organization with 400 members. Through easements, acquisitions, and by working with other conservation partners INLT has preserved nearly 6000 acres of wetlands, shorelines, farmlands, and forests in eastern Washington and northern Idaho for present and future generations. The INLT works in five counties in eastern Washington (Spokane, Lincoln, Pend Oreille, Stevens, and Adams) and two counties in northern Idaho (Kootenai and Bonner).

The **Palouse Land Trust** mission is to “conserve the open space, wildlife habitat, water quality, and scenery of the Palouse.” The Palouse Land Trust shares information about conservation easements and makes referrals regarding new easements.

The **Land Trust of the Treasure Valley (LTTV)** is dedicated to protecting open space in southwest Idaho—wildlife habitat, farming and resource lands, scenic open spaces, and natural ecosystems. These landscapes are essential to the quality of life and the economic health of this area. Working with landowners, the LTTV provides the means for permanent conservation of these vital lands and their resources. The LTTV helps landowners who wish to protect their lands through voluntary private action.

The **Rocky Mountain Elk Foundation** is an international, mission based, nonprofit wildlife habitat conservation organization. With more than 132,000 members, the Elk Foundation has conserved and enhanced more than 3 million acres of wildlife habitat throughout North America. Founded in 1984, the Elk Foundation is headquartered in Missoula, Montana with Canadian headquarters in Rocky Mountain House, Alberta. The Elk Foundation is represented in all 50 states, plus an international membership in Canada and 26 foreign countries.

The **Sawtooth Society** is an independent, nonpartisan, nonprofit organization formed in 1997 to help protect the 756,000–acre Sawtooth National Recreation Area (SNRA). The Society's mission is to help preserve and protect the natural, historical and recreational qualities of the SNRA. The Society is the only organization dedicated

exclusively to serving as an advocate for the SNRA, preserving open space in the SNRA, and enhancing recreational facilities and services in the SNRA.

The **Southern Idaho Land Trust, Inc.** is a private non–profit organization, managed by local residents whose mission is to provide landowners voluntary opportunities to preserve and protect lands for the future. It is specifically designed to meet the needs of Idaho citizens who care about Idaho's lands and are interested in good land stewardship, while preserving natural resources and maintaining quality of life. While development and growth are inevitable in Southern Idaho, it is imperative that we maintain a balance between the needs of private development and the long term interests of the public to sustain our natural resources for the future.

The **Teton Regional Land Trust (TRLT)**, located in eastern Idaho, is a nonprofit organization working to conserve the agricultural and natural resources of the Upper Snake River Valley, for the benefit of today's communities and as a legacy for future generations. As a community–based conservation organization, the Land Trust works with private landowners to conserve agricultural and natural resources that are critical to the region's communities—both human and wild. Through several avenues, the Land Trust is able to offer willing landowners options regarding their land and legacy.

Launched through the purchase of 240 acres of prime grizzly bear habitat adjoining protected land along Montana's eastern front of the Rocky Mountains, the mission of **Vital Ground** is to protect and restore North America's grizzly bear populations by conserving wildlife habitat.

The **Wood River Land Trust** is a non–profit organization created in 1994 when a group of volunteers took action after recognizing the threats to the area's cherished landscapes. They organized with the purpose of protecting open space and maintaining the natural integrity of this grand place. The WRLT seeks to keep land in private hands and to promote the continuation of historic uses such as farming, ranching and recreation while ensuring a legacy of open space for future generations. Working with landowners and the community, WRLT protects open space for current and future generations.

Audubon Society

The mission of the **National Audubon Society** is to conserve and restore natural ecosystems, focusing on birds and other wildlife, and their habitats, for the benefit of humanity and the earth's biological diversity. Idaho's Chapter Services Office is located in Missoula, MT and there are 6 locally–active Audubon chapters in the state (see below for contact information). Local chapters conduct bird walks, nature outings, educational programs, and advocacy campaigns.

Chapter Services Office
Building 30, Fort Missoula Road, Missoula, MT 59804
Contact: Lynn Tennefoss, (800) 542–2748, chapter_services@audubon.org

Coeur d'Alene Audubon Society
P.O. Box 361, Coeur d'Alene, ID 83816
Contact: Lisa Hardy, (208) 682–4808, www.cdaaudubon.org

Palouse Audubon Society
P.O. Box 3602, Moscow, ID 83843
Contact: Charles Swift, (208) 883–0553, www.palouseaudubon.org

Golden Eagle Audubon Society
P.O. Box 8261, Boise, ID 83707
Contact: Bruce Ackerman, (208) 342–0896, www.goldeneagleaudubon.org

Prairie Falcon Audubon Society
649 Lynwood Blvd., Twin Falls, ID 83301
Contact: Karl Ruprecht, ruprechtjk@hotmail.com

Portneuf Valley Audubon Society
P.O. Box 4328, Pocatello, ID 83205
Contact: David Mead, (208) 478–2817, www.pvaudubon.org

Snake River Audubon Society
P.O. Box 2922, Idaho Falls, ID 83403
Contact: Mark Delwiche, (208) 525–9414, delwiche@srv.net

Other Local Birding Groups

Southwestern Idaho Birders Association
P.O. Box 1341, Nampa, ID 83653
Contact: Fred Hill, (208) 454–9001, facjhill@myexcel.com

Bird Observatories

Idaho Bird Observatory
Boise State University, 1910 University Drive, Boise, ID 83725
Contact: Greg Kaltenecker, (208) 377–1440, www.idbsu.edu/biology/ibo

Bird Conservation Region Coordinators

Great Basin Bird Conservation Region (BCR 9)
5928 N. River View Circle, Mountain Green, UT 84050
Contact: Don Paul, (801) 643–5703, avocet@qwest.net

Northern Rockies Bird Conservation Region (BCR 10)
33 Second Street East, Suite 10, Kalispell, MT 59901
Contact: Dan Casey, (406) 756–2681, dcasey@abcbirds.org

Southern Rockies/Colorado Plateau Bird Conservation Region (BCR 16)
P.O. Box 1533, Pinetop, AZ 85935
Contact: Bob Vahle, vahle@wmonline.com

Other Key Partners

Started in 1999, the **North American Bird Conservation Initiative (NABCI)** is a coalition of government agencies, private organizations, academic institutions, and private industry leaders in Canada, the United States, and Mexico working to achieve integrated bird conservation that will benefit all birds in all habitats. NABCI participants aim to ensure the long–term health of North America's native bird populations by increasing the effectiveness of their bird conservation initiatives and programs, enhancing coordination among their initiatives and programs, and fostering greater cooperation among the continent's 3 national governments and their people. The vision is to protect, restore, and enhance populations and habitats of North America's birds through coordinated efforts at international, national, regional, state, and local levels, guided by sound science and effective management. The goal is to deliver the full spectrum of bird conservation through regionally based, biologically driven, landscape–oriented partnerships.

The **Intermountain West Joint Venture (IWJV)** was established in 1994 as the eleventh habitat joint venture. It encompasses parts of 11 western states, including all of Idaho. Initially, public agencies and conservation groups worked as partners through an IWJV State Steering Committee in Idaho to identify, protect, restore and enhance wetlands and other important habitats for waterfowl and other migratory birds, as well as native resident birds such as greater sage–grouse. In 1995 the IWJV Management Board adopted an Implementation Plan, which was intended to provide a framework for implementing the NAWMP in Idaho and other states of the Intermountain West. In 2000, the IWJV Management Board determined that the 1995 IWJV Implementation Plan should be updated and that it should be rewritten from the ground up, state by state. This updated planning process attempted to coordinate NAWMP and joint venture objectives with other existing bird initiatives operating within the Intermountain West region. As a result, coordinated “all bird” implementation plans for all the states of the IWJV were ultimately developed; the **Coordinated Implementation Plan for Bird Conservation in Idaho** was completed in 2005.

Located in the heart of Central Idaho at the Ketchum/Sun Valley Heritage and Ski Museum, the **Sawtooth Science Institute (SSI)** is an outreach field study center of Idaho State University’s College of Education and the Idaho Museum of Natural History (IMNH). The Institute is dedicated to the study of the natural history of the northern Rockies. The Institute’s workshops are site–specific and hands–on, where students enjoy unique learning experiences with the great outdoors as their classroom. In collaboration with the Ketchum/Sun Valley Historical Society, the Institute has established a Teaching and Learning Center for the study of "People and their Environment." The goals are to: (1) serve the needs of teachers, students, community

groups, and other students of natural history; (2) provide site–specific natural history information, materials and resources; (3) integrate locally relevant cultural and natural history across disciplines; and (4) help facilitate a reconnection with the natural environment.

The **Intermountain Forest Association (IFA)** is an organization of wood product manufacturers, forestland owners and related businesses in the Northern Rockies. IFA is headquartered in Coeur d'Alene, Idaho with satellite offices in Boise, Idaho and Rapid City, South Dakota. The IFA develops and implements solution–oriented policies intended to provide a positive climate for forest management as well as a stable and sustainable supply of timber from public and private forestlands; works to assure that regulations affecting their member companies remain reasonable; serves as a source of information to media, the public and other interested parties on a wide variety of forestry and natural resource issues; and finally, the IFA provides a conduit for its member companies to develop cooperative relationships among its peers and colleagues.

The **Columbia Basin Fish and Wildlife Authority** is an organization whose membership consists of the 4 state and 2 federal fish and wildlife management entities and 13 Indian tribes of the Columbia River Basin. Its members are the legally recognized managers of the fish and wildlife resources. These responsibilities are theirs through federal and state statutes, treaties and court actions.

Idaho Department of Fish and Game Plans

The Compass—the 2005 Idaho Department of Fish and Game Strategic Plan—is a long–range, big picture document that describes where the IDFG wants to be in the future and how, in general terms, we intend to get there. Based on input from a broad spectrum of stakeholders and the general public, The Compass identifies 13 key issues facing the IDFG in the future. Four overarching goals are established to address these issues: (1) sustain Idaho's fish and wildlife and the habitats upon which they depend, (2) meet the demand for fish and wildlife recreation, (3) improve public understanding of and involvement in fish and wildlife management, and (4) enhance the capability of the Department to manage fish and wildlife and serve the public. In addition to these goals, The Compass describes the desired outcomes, objectives, and strategies that will be employed to achieve the goals. The Compass also explains how action planning, monitoring and evaluation, and adaptive management will be used to implement the plan.

The **Idaho Department of Fish and Game Fisheries Management Plan 2001–2006** describes the management direction that the Department intends to pursue in order to provide the continued supplies of fish and fishing opportunity as mandated by law. It describes overall Department and specific fisheries direction and outlined in the plan is a continuation of long–established programs. Annual work plans of field and headquarters fisheries managers will be developed within the priorities and framework of the plan (Idaho Department of Fish and Game 2001).

Idaho's Anadromous Fish Stocks: Their Status and Recovery Options–A Report by Department Staff to the Director. This report provides background information for the Commission to consider prior to providing input to the National Marine Fisheries Service (NMFS) for the 1999 Decision Point. This report lists key policy statements regarding anadromous fish; establishes information supporting the hydrosystem as the cause of the decline and continued depressed state of Idaho's anadromous fish stocks; and examines options for fish recovery. A separate appendix [Volume 2] includes summaries of many documents cited in this report (IDFG 1998a).

Idaho's Anadromous Fish Stocks: Their Status and Recovery Options–Volume 2 [Appendices]. This volume of appendices includes Idaho Policy Statements Regarding Anadromous Fish; Fisheries Management Plan 1996–2000; Summary Reports; Letters; and other relevant information requisite to decision–making (IDFG 1998b).

IDFG Species Management Plans and Annual Federal Assistance Reports. The Idaho Department of Fish and Game has prepared management plans for individual species (elk, mule deer, white–tailed deer, moose, mountain goat, pronghorn, American black bear, mountain lion) and groups of species (waterfowl, upland game birds, furbearers, and nongame wildlife). Each plan identifies Commission direction, management objectives for the animals identified, distribution, historical populations and trends, critical management issues and strategies, and (for hunted species) hunter opportunity, hunt management framework, and economic impacts. Species Management Plans for hunted species also summarize population survey data, harvest data, and analyses pertinent to future management direction.

Originally conceived to identify the rationale and Commission–approved management direction to wildlife staff and to communicate that management direction to the public, these documents provide a wealth of information about Idaho wildlife, distribution, and population status and trend. Plans are updated as necessary. In addition to the species plans, Federal Assistance reports are prepared that detail population surveys, habitat conditions, transplant projects, research findings, and harvest data for hunted species annually. Species Management Plans and annual Federal Assistance reports are available on request from the Idaho Department of Fish and Game, Bureau of Wildlife, P.O. Box 25, Boise, Idaho 83707.

Management of Gray Wolf in Idaho. As of September 2005, gray wolf populations in Idaho south of Interstate 90 are managed under Section 10j of the Endangered Species Act and those north of Interstate 90 are managed as endangered. Recovery goals for gray wolf in Idaho, Montana, and Wyoming have been achieved and attempts to delist the species are ongoing. Once the gray wolf is delisted, it will be managed by IDFG as a big game animal and protected by state law. The **State Wolf Conservation and Management Plan** requires that a minimum of 15 packs of wolves be maintained and monitored, and populations be managed by sport hunting and lethal removal of problem wolves. Statewide objectives are to maintain wolf populations in Idaho through sport harvest at a level that is commensurate with prey and to reduce livestock and human interaction problems.

Management of Grizzly Bear in Idaho. As of September 2005, grizzly bear occurs in the Selkirk and Yellowstone Ecosystems in Idaho. Populations are managed as threatened under the Endangered Species Act. The Selkirk Ecosystem encompasses parts of Idaho and Canada and has approximately 70 grizzly bears there. Management is designed to increase populations through decreasing mortality caused by illegal kills by hunters and management kills as a result of sanitation problems. Grizzly bears in the Yellowstone Ecosystem have reached recovery goals and the USFWS is currently attempting to delist them. Once delisted, they will be managed as a big game animal and protected under state law. Management will attempt to reduce conflicts with livestock producers and human interactions while trying to increase populations in Idaho to levels that will allow for limited sport harvest.

The **Mule Deer Initiative** is a focused and increased effort by the Idaho Department of Fish and Game (IDFG) to: improve mule deer numbers, increase hunter satisfaction, and protect and improve habitat. Six major components will be addressed including: habitat improvement, population management, law enforcement, predator management, access management, and public involvement/outreach. The Idaho Department of Fish and Game is committed to engaging the support of public land management agencies, private landowners, elected officials and sportsmen to implement measurable actions that will positively affect mule deer populations and mule deer hunting.

Partnership–based Plans and Programs

Conservation Plans, Agreements, and Strategies

The Idaho Conservation Effort (ICE) began in November 1993 with the primary goal of being a proactive species conservation program rather than reacting to species being listed as threatened or endangered. A Memorandum of Understanding (MOU) was signed among the Idaho Department of Fish and Game, Idaho Department of Parks and Recreation, U. S. Fish and Wildlife Service Snake River Basin Office (Boise), U. S. Forest Service regions 1 (Missoula, Montana) and 4 (Ogden, Utah), and the Idaho State Office Bureau of Land Management. The Fish and Wildlife Service was the lead agency. The MOU was modified in November 1994 to clearly identify the state agencies as the ICE leaders because of concerns with the Federal Advisory Committee Act (FACA). The MOU was again amended in 1998 to allow any other interested parties to participate in the ICE, but only the Natural Resources Conservation Service, Potlatch Corporation, Boise Cascade Corporation, and The Nature Conservancy joined the original signatories. The Governor's natural resource staff and the chairmen of the Legislature's House and Senate natural resource committees provided liaison and oversight.

The specific objectives of the ICE were to: (1) identify and implement early conservation measures to reduce, eliminate, or mitigate those factors considered to be limiting the species' well being, (2) stabilize and recover the species and their habitats to preclude listing as endangered or threatened under the Endangered Species Act, (3) recover

populations of species that are listed to facilitate their removal from the list, and (4) encourage private landowners to voluntarily manage their land holdings for species of concern or to maintain or enhance habitat for those species. The essence of ICE was that "an ounce of prevention is worth a pound of cure."

The ICE produced draft, and in a few cases final, Species Conservation Assessment/Conservation Strategy documents for 37 priority species of plants and animals from April 1994–April 1995. These species were selected in consultation with the Idaho Conservation Data Center, Idaho Chapter of The Wildlife Society, Idaho Chapter of the American Fisheries Society, and Idaho Native Plant Society. Most were former Fish and Wildlife Service Category 2 (C2) candidate species, species for which listing as threatened or endangered may be appropriate but for which conclusive data on biological vulnerability and threat were not available.

The purpose of the **Idaho Bat Conservation Plan** is to promote the long–term conservation of Idaho bats through research, management, inventory and monitoring, and public education. Idaho land managers, wildlife managers, researchers, and public health officials should address these areas of concern. Management guidelines are intended to apply, to some extent, to the entire state. Interstate and international cooperation is promoted. Goals have been prioritized according to the North American Bat Conservation Partnership's state guideline priority settings. Prioritization of objectives and specific projects is left to the discretion of the land manager. Resource managers must determine which goals and objectives are most urgent and applicable in their area of authority. This plan is intended to provide a framework for other bat conservation plans at local, state, tribal, and federal levels. This plan is modeled after the North American Bat Conservation Partnership's Strategic Plan and is intended to facilitate communication and the accomplishment of goals and objectives.

The Nature Conservancy Ecoregional Plans

Canadian Rocky Mountains Ecoregional Assessment. The Nature Conservancy and Nature Conservancy of Canada convened a multi–jurisdictional team in March 2000 with the objective of employing a science–based approach to design a portfolio of conservation areas for the Canadian Rocky Mountains ecoregion. This assessment is not meant to serve as a protected areas strategy since it is recognized that conservation in this ecoregion will require a wide range of public/private conservation and stewardship strategies. The CRM ecoregional assessment represents a first step in this process by developing a network of conservation areas that with proper management would ensure the long–term persistence of the ecoregion's species, communities and ecological systems (Rumsey et al. 2003.).

The Columbia Plateau Ecoregional Assessment is 1 of 10 pilot projects initially proposed by TNC to help define the organization's approach to working and planning on an ecoregional scale. The project was coordinated by a team of Conservancy staff with critical input from TNC colleagues, public agency land managers and

academic scientists. The 3 main goals of TNC's Columbia Plateau project were to: (1) identify a first iteration of a portfolio of conservation sites that, collectively (and with appropriate conservation actions) could maintain all viable native species and natural communities within this ecoregion; (2) produce a companion conservation plan and report to provide additional context and guidance for use and implementation of the conservation portfolio; and (3) evaluate different approaches to identifying and designing ecoregion–scale conservation portfolios, to inform future ecoregional conservation efforts by TNC or others.

The goal for the **Middle Rockies–Blue Mountains Ecoregional Conservation Plan** was to identify the suite of conservation sites and strategies that will ensure the long–term survival of all viable native plant and animal species and natural communities in the ecoregion. The planning team followed portfolio design procedures outlined in *Designing a Geography of Hope: Guidelines for Ecoregion–based Conservation in The Nature Conservancy* (TNC 1997). The planning team, including individuals from Idaho, Oregon, Montana and TNC's home office in Arlington, VA, worked on this effort from September 1998 through April 2000. The Idaho Department of Fish and Game's Geographic Information System (GIS) was used for all data compilation, management and analysis tasks of the Middle Rockies–Blue Mountains ecoregional planning team.

The **Wyoming Basins Ecoregional Plan** presents the methods used and the portfolio obtained for the Wyoming Basins Ecoregion. The Plan was produced by gathering as much existing data as possible on the distribution of plants and animals in the region. A list of both rare and common species and community types in the region was also developed as part of the process. These were prioritized using The Nature Conservancy's Natural Heritage program rankings (Groves et al. 1995). Land cover–types were derived from Gap analyses done by each of the states. Using the best available data, target goals were established for each of the rare species or community types. Finally, locations of these species and covertypes were mapped by a computerized Geographic Information System (GIS). The GIS plotted maps of where the largest number of targets overlapped. Using the plotted locations of rare species and representative cover–types, polygons were drawn on the map to capture the targeted numbers of animals or acres. In the final stage of portfolio selection, sites were prioritized and their boundaries refined as best as possible.

The **Biological Conservation Assessment for the Utah–Wyoming Rocky Mountains Ecoregion** presents a contribution to the ecoregional planning efforts of The Nature Conservancy and as part of the foundation for site–level planning. It is complementary to a report to the Greater Yellowstone Coalition on the Greater Yellowstone Ecosystem (GYE), which forms the northwestern portion of the UWRM. The approach taken in this study was representative of regional–scale or ecoregional conservation planning, which has become the standard approach for conservation organizations and agencies worldwide. Ecoregional conservation planning differs from conventional land–use planning in that regions are defined ecologically rather than politically. For example, the GYE was first defined by John and Frank Craighead as an area large enough to sustain the disjunct Yellowstone population of grizzly bear. That

definition has expanded to encompass other qualities of the ecosystem, including intact watersheds and mountain ranges. A fundamental quality of ecoregional conservation planning is that it is systematic and, therefore, superior in many ways to opportunistic or politically biased planning. Among the key attributes of systematic conservation planning are explicit goals and quantitative targets, objective methods for locating new reserves to complement existing ones, and explicit criteria for implementing conservation actions.

Other Key Plans and Programs

The purpose of the **Conservation Assessment of Idaho** was to evaluate the completeness of Idaho's existing protection system and to identify conservation opportunities for correcting the inadequacies. The project focused on the concept that the best way to maximize preservation of biodiversity is to develop a reserve system that includes every species. The assessment of Idaho consists of four components: vegetation based habitat, physical habitat, species richness, and sensitive species occurrences. A similar assessment was also conducted for aquatic systems. The results of the terrestrial and aquatic analyses were integrated for generation of a conservation vision for Idaho (Conservation Geography and Idaho Conservation League 2003).

Idaho GAP Analysis Project GAP Analysis originated in Idaho in the late 1980s as a system for assessing the distribution of native plant and animal distributions in relation to land stewardship. Since then, GAP has grown to a federally funded program under the Biological Resources Division of the United States Geological Survey. GAP's main objectives are to: map current land cover, predict the distribution of vertebrate species, document the representation of vertebrate species and land cover types in areas managed for the long–term maintenance of biodiversity, and provide these data to the public. This is accomplished through the cooperation of many state and federal organizations.

National Forest Plans

National Forests and National Grasslands, administered by the U. S. Department of Agriculture, each have in place a plan that provides guidance to the management of resources. These plans provide management goals, set standards for resource protection, and identify desired conditions. Plans for USDA lands in Idaho were developed during the 1980s and were intended to be effective over a 10– to 15–year period. Plan revision was begun during the late 1990s, and 4 of the National Forests and the National Grassland are currently operating under revised plans. Three of the National Forests are in the process of plan revision, and 1 National Forest will begin the revision process in the near future. Revision of several plans have recently been completed for several National Forests and the National Grassland. These include the Boise National Forest Plan (2003), the Payette National Forest (2003), and the Sawtooth National Forest (2003). The Caribou National Forest and the Targhee National Forest were combined during 2000. Each is now considered to be a zone of

the Caribou–Targhee National Forest, and each zone has its own plan. The plan for the Targhee zone was completed during 1997; the plan for the Caribou zone was completed during 2003. The Curlew National Grasslands Plan was completed during 2002.

Several National Forests are in the process of revising management plans. The Clearwater National Forest Plan (1987) revision was started during 2004 and the expected completion date is 2006. The Idaho Panhandle National Forest Plan (1987) revision was started during 2002 and is expected to be completed during 2006. The Nez Perce National Forest Plan (1987) revision started during 2004 and is expected to be completed during 2007. The Salmon National Forest and the Challis National Forest integrated during 1995; the Challis plan was done in 1987 and the Salmon plan was done in 1988. Revision is scheduled to begin during 2006.

Bureau of Land Management Land Use Plans (LUPs)

The U. S. Bureau of Land Management produces plans that provide management direction for administered lands. BLM land use plans have been referred to as either Resource Management Plans (RMP) or Management Framework Plans (MFP). Land use plans identify desired future conditions, present a framework of actions needed to achieve these conditions, and describe allowed land uses as well as applicable restrictions of land uses. Idaho BLM is in the midst of revising plans that were produced during the 1970s and 1980s and intends to initiate revision of all plans before 2010 . Recently revised plans include the Challis RMP (1999) and the Owyhee RMP (1999). The Birds of Prey RMP, the Bruneau RMP, and the Craters of the Moon RMP are expected to be completed during 2005 or early 2006. The revision of the Pocatello RMP (which will include the Malad RMP), the Cottonwood RMP (formerly the Chief Joseph MFP), and the Coeur d'Alene RMP (formerly the Emerald Empire MFP) are currently in the early or middle stages of the revision process.

Projected dates for other plan revision are tentatively scheduled. The Four Rivers RMP development is projected to begin during 2008 and will supersede the Cascade RMP (1988) and the Kuna MFP (1983). The Jarbidge RMP revision is projected to begin during 2006 and will replace the Jarbidge RMP (1987). The Shoshone RMP revision is projected to begin during 2006 and will replace the Magic MFP (1975), the Bennett Hills/Timmerman Hills MFP (1976), the Sun Valley MFP (1981), and part of the Monument RMP (1985). The Burley RMP revision is projected to begin during 2008 and will replace the Twin Falls MFP (1982), the Cassia RMP (1985), and part of the Monument RMP (1985). Idaho Falls RMP revision is projected to begin during 2006 and will replace the Medicine Lodge RMP (1985), the Little Lost–Birch Creek MFP (1981), the Big Desert MFP (1981), and the Big Lost MFP (1983). The Salmon Field Office has not yet projected a date for the revision of the Lemhi RMP (1987).

Subbasin Plans

The development of this series of plans was initiated by the Northwest Power Planning Council, which is an agency involved in the restoration of fish and wildlife in the Columbia River Basin. In general, these plans contain information addressing protection and management of fish and wildlife and their habitats, particularly in the context of priority and indicator species, habitat restoration, fish management, and management of habitats of interest to the Bonneville Power Administration. In addition to background materials and assessment of current conditions, these plans include a management plan, which includes biological objectives and strategies. The management plans are intended to have a 10–15 year planning horizon.

Plans are developed to address needs for major drainage subbasins within the Columbia River Basin. Subbasin plans affecting Idaho include: Pend Oreille, Kootenai, Spokane, Clark Fork, Coeur d'Alene, Palouse, Clearwater, Salmon, Snake Hells Canyon, Snake Lower Middle, Snake Upper Middle, Weiser, Payette, Boise, Owyhee, Bruneau, Snake Upper Closed Basin, Snake Upper, and the Snake Headwaters.

Bird Habitat Conservation Plans

North American Waterfowl Management Plan (NAWMP): This plan was adopted by the United States and Canada in 1986 and by Mexico in 1994, to address the conservation and restoration of waterfowl, other migratory waterbirds, and the habitats on which they depend. The plan, as adopted, aims to restore waterfowl populations to 1970–79 levels and establishes specific population objectives for 25 species of ducks, five species of geese, plus trumpeter and tundra swans. The plan was updated in 1994, 1998 and 2004. A companion technical document to the 2004 plan, subtitled Implementation Framework, is also now available. This document provides a more detailed discussion of the plan's themes and includes a significant amount of technical information that will be useful to flyway and joint venture technical groups. Congress established the **North American Wetlands Conservation Act (NAWCA)** in 1989 to implement the objectives of NAWMP. This program encourages and rewards partnerships among all wildlife conservation initiatives through two matching grant programs, a standard grant program and a small grant program. For additional information about the NAWCA grants program, contact the Division of Bird Habitat Conservation at 703/358–1784.

The **Partners in Flight (PIF) North American Landbird Conservation Plan** provides a continental synthesis of priorities and objectives that will guide landbird conservation actions at national and international scales. While the scope for the first version is limited to the 448 native landbirds that breed in the U. S. and Canada, full participation by our Mexican partners will add another 450 breeding species to the next iteration of the Plan. As documented in this plan, fully 100 landbird species in Canada and the U. S. warrant inclusion on the PIF Watch List, due to a combination of threats to their habitats, declining populations, small population sizes, or limited distributions. Of these, 28 species require immediate action to protect small remaining populations, and 44 more are in need of management to reverse long–term declines. This plan also highlights the need for stewardship of the species and landscapes characteristic of each

portion of the continent, identifying 158 species (including 66 on the Watch List) that are particularly representative of large avifaunal biomes, and whose needs should be considered in conservation planning. Taken together, the pool of Watch List and Stewardship Species represent the landbirds of greatest continental importance for conservation action.

Idaho PIF was formed in 1992 to direct resources of PIF partners to the conservation of birds and their habitats through cooperative efforts in the areas of monitoring, research, management and education. In January 2000, Idaho PIF released Version 1.0 of the **Idaho Bird Conservation Plan (BCP)**, which was based on an assessment of the status of 243 species of breeding birds in Idaho, including waterfowl, shorebirds, waterbirds and 119 species of Neotropical migrants. This assessment identified 60 species of Idaho breeding birds, considered to be high priority species in Idaho. These 60 species are organized into 12 habitats, which are listed in the BCP. These habitats in turn were combined and synthesized into four habitats considered to be the highest priority for Idaho birds: riparian, non–riverine wetlands (marshes lakes and ponds), sagebrush shrublands (excluding salt desert shrub), and ponderosa pine (dry ponderosa pine/Douglas–fir/grand fir) forests. Each of these 4 priority habitats is described in the BCP, along with their importance to birds. Also included in the BCP are statewide habitat objectives, issues, strategies and tasks for implementing those habitat objectives.

United States Shorebird Conservation Plan: Partners from state and federal agencies, joint ventures, and non–governmental organizations from across the country pooled their resources and expertise to develop a conservation strategy for migratory shorebirds and the habitats upon which they depend. This plan provides a scientific framework to determine species, sites, and habitats that most urgently need conservation action. The plan has three major goals at different scales. At a regional scale, the goal of the plan is to ensure that adequate quantity and quality of shorebird habitat is identified and maintained to support the different shorebirds that breed in, winter in, and migrate through each region. At a national scale, the goal is to stabilize populations of all shorebird species known or suspected of being in decline due to limiting factors occurring within the U. S., while ensuring that common species are also protected from future threats. At a hemispheric scale, the goal is to restore and maintain the populations of all shorebird species in the Western Hemisphere through cooperative international efforts.

An **Intermountain West Regional Shorebird Plan** was released in 2000. This regional plan notes that perhaps a million shorebirds breed in the Intermountain West and that millions more migrate through the area each year. The plan recognizes that finding ample high quality fresh water will be the greatest challenge faced by shorebirds in the Intermountain West. The regional plan articulates 7 goals, plus associated objectives and strategies related to habitat management, monitoring and assessment, research, outreach and planning. The planning goal includes objectives to coordinate shorebird planning and projects with other migratory bird initiatives and specifically with the Intermountain West Joint Venture (IWJV). The plan identifies 11 species of

shorebirds that regularly breed in the region, as well as 23 additional species that are annual migrants. It also recognizes 11 Key Shorebird Areas, one of which is American Falls Reservoir. The document also identifies 79 Managed Shorebird Sites, 11 of which are in Idaho, including Bear Lake NWR, Camas NWR, and Market Lake WMA. American Falls/Springfield Bottoms also has been designated a Regional Shorebird Reserve by the Western Hemisphere Shorebird Reserve Network (WHSRN). A revised version of the Intermountain West Plan was released in March 2004.

The **North American Waterbird Conservation Plan** focuses on waterbirds across the continent. Primary attention is provided to species that are not currently addressed by other conservation initiatives, and includes grebes, rails, seabirds, terns, and herons. The plan provides an overarching continental framework and guide for conserving waterbird species occurring from the Canadian Arctic to Panama, from Bermuda to U. S. Pacific Islands. The plan sets forth goals and priorities for waterbirds in nesting, wintering, and migration habitats, advocates continent–wide monitoring, provides impetus for regional conservation planning, proposes national, state, provincial, and local conservation planning and actions, and offers a larger context for local habitat protection.

The **Intermountain West Waterbird Conservation Plan** is one of several regional plans being developed as part of the Waterbird Conservation for the Americas initiative, as called for in the North American Waterbird Conservation Plan. This regional plan addresses populations and habitats in Bird Conservation Regions (BCRs) 9, 10, 15 and 16, focusing on conservation strategies for the U. S. portion of the region. The purpose of the plan is to fill knowledge gaps and aid in “all–bird” conservation efforts of the IWJV, 11 states, and other entities associated with the geographic scope of the plan. The content of the plan will be integrated and linked to that of waterbird conservation plans developed for the Canada portions of the Intermountain West region and for adjacent regions. It is intended that the plan be a working document, with focus toward on–the–ground implementation projects.

Regional Plans

The **Interior Columbia Basin Ecosystem Management Project** compiled and created large amounts of broad–scale and mid–scale spatial data and associated databases. These data are available for download via the project Web site, *www.icbemp.gov*, but the size and scope of the data make it impractical for many users to download all available data. The data available via the internet are distributed in compressed file formats and must be uncompressed and imported by end users for use in Geographic Information Systems (GIS). The intent of this set of CD–ROMs is to distribute all of the released data with up–to–date metadata, and to provide as much data as possible in an uncompressed format that is ready for immediate use in a GIS. Data sets include: Aquatic; Atmospheric; Cultural; Demographic; Disturbance; EIS Directions and Outcomes Group; Fisheries; Hydrologic; Landscape Characterization; Minerals/Geology; Models and Related Model Files; Physiographic; Political; Species

Ranges; Subsample; Vegetation; Vegetation and Disturbance CRBSUM Group; and Old Assessment Data (Interior Columbia Basin Ecosystem Management Project 2001).

The **SAGEMAP** project, conducted by the Snake River Field Station (SRFS) of the USGS Forest and Rangeland Ecosystem Science Center, is identifying and collecting spatial data layers needed for research and management of greater sage–grouse and shrubsteppe systems. The datasets, which can be queried, viewed, and downloaded from their FTP site, are important for our understanding and management of shrubsteppe lands and associated wildlife. The data can be used to identify factors causing the declines of wildlife and shrubsteppe habitats, or in the decision process for listing of greater sage–grouse as a Threatened or Endangered species, and to help guide restoration of habitats in the Great Basin (
available online at http://sagemap.wr.usgs.gov/index.asp).

National Biological Information Infrastructure's (NBII's) Great Basin Information Project (GBIP). The unique biodiversity found in the Great Basin and Columbia Plateau faces potentially devastating and irreversible change as a result of land uses and growth of human populations in these regions. A wide variety of individuals and agencies use and/or manage the region. Some of the realized and potential changes are tied to individual or local decisions without a regional or cumulative understanding of the consequences. Effective management of the natural resources in areas as complex as these requires ready access to information so that everyone can efficiently work together. This information project provides consolidated and efficient access to information about the Great Basin and the Columbia Plateau Regions (NBII/GBIP). GBIP is available online at http://greatbasin.nbii.gov/

General Management Plan: Nez Perce National Historical Park and Big Hole National Battlefield. This General Management Plan for Nez Perce National Historical Park provides focus and direction to guide resource management, general development, and park administration for the next 15 to 20 years. Fourteen sites in Washington, Oregon, Idaho, and Montana have been added to the original 24 sites established in 1965, in an effort to portray a more complete story of the Nez Perce people. This document contains information that applies to the entire park, including its purpose and significance, desired future, and interpretive themes, and management plans specific to each site (USDI National Park Service 1997).

Invasive Species Plans

Preparing to Meet the Challenge: An Assessment of Invasive Species Management in Idaho. Idaho has benefited greatly from the introduction of many nonnative species of plants and animals and suffered from others. Introduced species that escape their intended niche or which are unintentionally brought to our state and then cause either economic or ecological harm are termed "invasive." The enormous impact of these invasions is already evident as invasive species have damaged Idaho's rangelands, waterways, farms, forests, and urban environments. They even threaten human health. The purpose of this Assessment is to heighten awareness of the

problem, summarize ongoing efforts both in Idaho and nationally to address it, examine the strengths and weaknesses of the efforts and suggest some needed changes (Northwest Natural Resources Group 2003).

An Invasive Species Assessment Protocol: Evaluating Non–native Plants for Their Impact on Biodiversity—Version 1. NatureServe, in cooperation with The Nature Conservancy and the U. S. National Park Service, developed the Invasive Species Assessment Protocol as a tool for assessing, categorizing, and listing non–native invasive vascular plants according to their impact on native species and natural biodiversity in a large geographical area. The protocol is offered here in generalized form for others who might wish to use it to conduct similar assessments and create lists of invasive plants for other nations, states, provinces, ecological regions, or comparable areas (Morse et al. 2004).

Selected Species Assessments and Plans

The **Conservation Plan for the Greater Sage–Grouse in Idaho** (in progress) will provide considerable information to aid in the conservation of sage–grouse in Idaho, including status by Sage–grouse Planning Area, detailed background information on threats, instructions for Local Working Groups, general habitat and population goals and objectives, a suite of conservation measures, population and habitat monitoring recommendations and research needs.

Disappearing Jewels: The Status of New World Amphibians. In recent years scientists and conservationists have raised the alarm that amphibians are disappearing before our very eyes. Even in seemingly pristine habitats, more and more of these dazzling denizens of our forests, deserts, streams, and wetlands have gone missing. But reports so far have been limited in geographic and taxonomic scope. Are these declines widespread or are they limited to a few localized areas? Are amphibians suffering from the general biodiversity crisis in the same manner as other well–publicized groups such as birds or mammals, or is something fundamentally different happening to amphibians (Young et al. 2004).

Fish Out of Water: A Guide to Global Warming and Pacific Northwest Rivers. An overwhelming majority of the world's scientists agree that human activities, particularly the burning of fossil fuels such as goal, oil, and gas in power plants, factories, and cars, have been causing excessive amounts of carbon dioxide and other gases to build up in the atmosphere. As a result, the Earth's atmosphere is rapidly heating up. This global warming is doing more than raising the Earth's average surface temperature. It is disrupting the planet's climate system, changing regional temperatures, causing sea levels to rise, and shifting rain and snowfall patterns around the world and across the United States, including the Pacific Northwest. These potential changes do not bode well for cold–water fish like salmon, steelhead, and trout—particularly in those rivers and streams that are also degraded due to dams, loss of riparian vegetation, water diversions, and other problems. This document identifies 10 rivers at risk: Columbia, Snohomish, Snoqualmie, Skykomish, Yakima, Snake, Deschutes, John Day, Klamath,

and Rogue, and five additional rivers to watch: Skagit, Hoh, Queets, Sandy, and Snake (Glick 2005).

State of Idaho Bull Trout Conservation Plan. First listed on June 10, 1998, the Bull Trout is currently designated as Threatened under the ESA in the conterminous U.S.A. (lower 48 states). Prior to this listing, the U. S. Fish and Wildlife Service concluded in 1995 that listing was precluded because of higher priority listing actions. This decision provided an opportunity for individual states to take conservation actions necessary to recover the species. Consequently, in 1995, Idaho Governor Phil Batt initiated development of a conservation plan to restore bull trout populations in Idaho. This document outlines the mission and goals of the Governor's Bull Trout Conservation Plan (Batt 1996).

Databases

Biotics is a software application comprised of a Geographic Information System (GIS) and a database management system. The application was released in 2002 by NatureServe to allied state and provincial Natural Heritage Programs and Conservation Data Centers for entering and managing information related to distributions of special status plants and animals, managed areas, and conservation sites. Field data shared by Idaho Conservation Data Center (IDCDC) partners complements data collected by IDCDC botany, zoology, and ecology staff. The Idaho Conservation Data Center provides scheduled data exports from Biotics to partner agencies, institutions, and offices that support the IDCDC through annual funding and data sharing.

The **Idaho Conservation Data Center Observations Database** stores survey–level data from incidental point observations, single inventories, and ongoing surveys. Data sources include rare animal observation reports, museum specimen data, journal articles, unpublished agency reports, and digital data sets. All such data received by IDCDC is entered into the Observations Database, and after being assigned basic quality ratings, is available for use in Biotics for project–specific analysis and for data requests. Data are stored in discrete fields to facilitate retrieval and can be exported in a variety of formats including Access reports, Excel spreadsheets and dbf files, or can readily be converted to shapefiles. As of October 1, 2005, the Observations Database contained approximately 40,000 records for 326 species.

The **Idaho Fish and Wildlife Information System (IFWIS)** is a comprehensive information system for standardizing data on fish and wildlife in Idaho. IFWIS is a framework built to maintain institutional memory, increase operational efficiency and ensure accurate and secure biological data. Under this vision, data are captured at or near their origin and stored in standardized databases and applications, which are geo–referenced to a common coordinate system. IFWIS is accessible via web, geographic information systems (GIS) and commonly used desktop software programs.

StreamNet is a cooperative information management and dissemination project focused on fisheries and aquatic related data in the Columbia River basin and the

Pacific Northwest. The project provides a variety of kinds of data related to fish resources and maintains the 1:100,000 scale hydrography layer for the Pacific Northwest. Information is available through the on–line database query or by custom request.

Ecological Systems Classification: NatureServe and its natural heritage program members, with funding from The Nature Conservancy, have completed a working classification of nearly 600 terrestrial ecological systems in the coterminous United States, southern Alaska, and adjacent portions of Mexico and Canada. Terrestrial ecological systems are specifically defined as a group of plant community types (associations) that tend to co–occur within landscapes with similar ecological processes, substrates, and/or environmental gradients. Terrestrial ecological system units represent practical, systematically defined groupings of plant associations that provide the basis for mapping terrestrial communities and ecosystems at multiple scales of spatial and thematic resolution. The systems approach complements the U. S. National Vegetation Classification, whose finer–scale units provide a basis for interpreting larger–scale ecological system patterns and concepts.

In 1993, the Department of Environmental Quality (DEQ) embarked on a pilot monitoring program, the **Beneficial Use Reconnaissance Project (now Program)**, nicknamed "**BURP**," which combined biological monitoring and habitat assessment to determine the quality of Idaho's waters. The purpose of BURP is to help Idaho meet the requirements of the federal Clean Water Act by providing data to use in determining the existing uses and beneficial use support status of Idaho's waterbodies. The program has been implemented statewide since 1994. At the end of the 2003 BURP season, a total of 5182 stream sites had been sampled in Idaho, making Idaho a national leader in bioassessment monitoring.

Habitats

Environmental conditions encountered in the state can be categorized in many ways at many scales. We used ecological systems—recurring groups of vegetative communities with similar physical environments and influenced by comparable ecological processes (e.g., fire)—to describe these environments. We have aggregated these systems into 18 spatially exclusive habitats on the basis of dominant landcover. Common and scientific names for plants that appear in the text are listed in Appendix G.

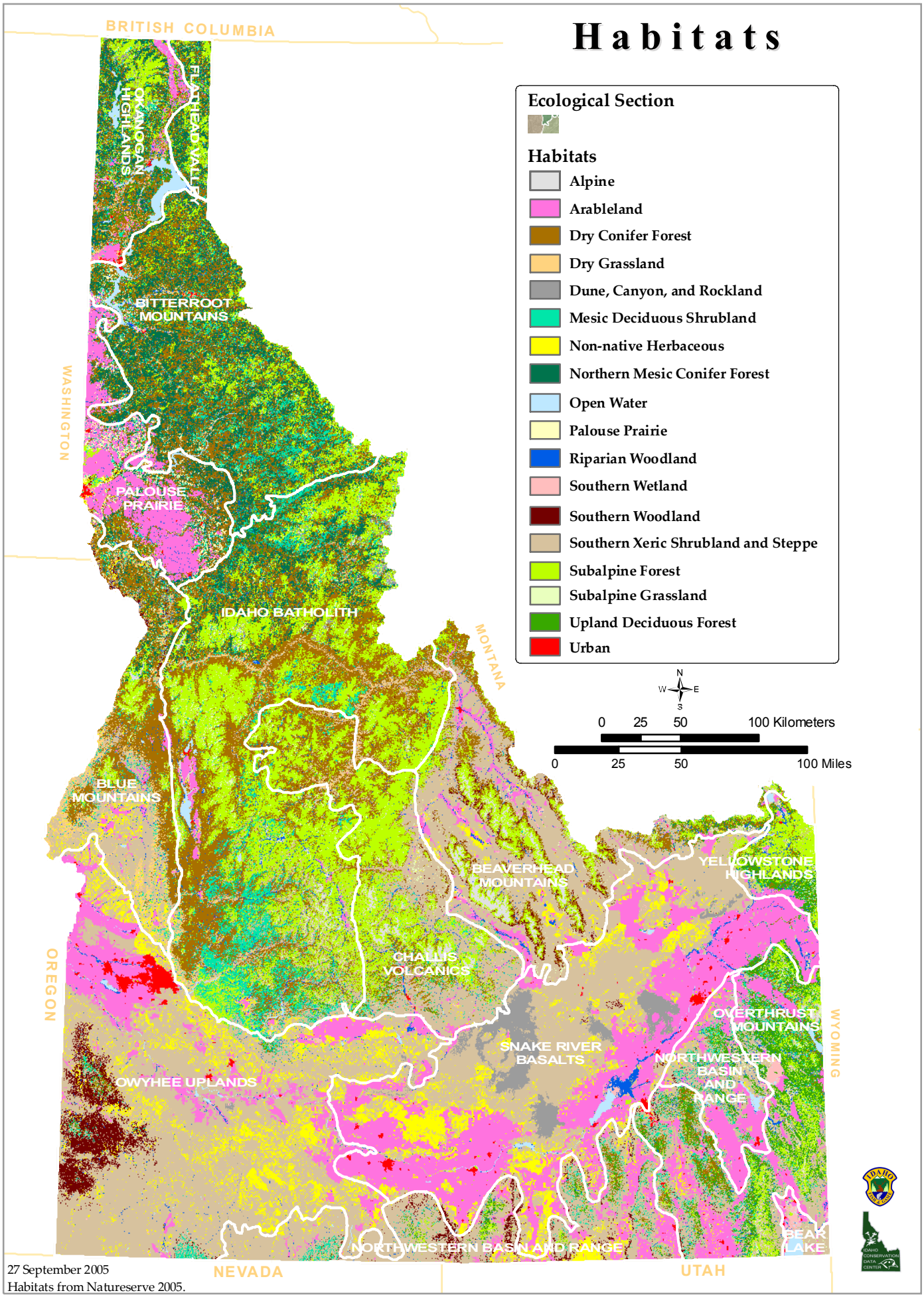

Figure 10. Map of Habitats in Idaho.

Arableland Habitat

Ecological Systems:
- Herbaceous Planted and Cultivated

Distribution: This habitat occurs statewide but is most extensive at lower elevations, particularly in the Palouse Prairie and Snake River Plain. It occurs primarily on flat or gently sloped landscapes in areas where the soil is amenable to tillage. This habitat is concentrated near sources of surface water or large aquifers and in association with other anthropogenic habitats.

Condition: This man–made habitat is characterized by periodic tillage of crops, irrigation, and applications of agrochemicals for intensive production of food and fiber. Some agricultural practices can reduce habitat for species that rely on crop residue and other attributes of arableland. Seasonally, these habitats are intensively used by some native species, and they provide year–round habitat for economically important non–native game birds. This habitat is susceptible to invasive plants.

Issues	Recommended Actions	Priority
Runoff from cultivated land and irrigation return water can increase sediment, nutrient and chemical load to waterbodies.	Implement best management practices to reduce runoff and capture irrigation return flows (e.g., buffer strips, constructed wetlands).	H
Agricultural practices can reduce the value of arableland to wildlife.	Encourage development of farm/ranch conservation plans through federal agencies and soil conservation districts.	H
	Address the needs of wildlife in farm/ranch plans and farm programs (e.g., Conservation Reserve Program, Wildlife Habitat Improvement Program, Landowner Incentive Program).	H

Non–native Herbaceous Habitat

Ecological Systems:
- Seeded Perennial Grassland
- Disturbed and Invasive Grass and Forb

Distribution: This habitat occurs most extensively at lower elevations in association with shrub–steppe habitats, particularly in the Snake River Plain. Much of this habitat is

the result of sagebrush removal and subsequent seeding with non–native perennial grasses. Some of this habitat was converted from arableland under the Conservation Reserve Program. These sites consist of marginally productive soils on rocky or steep slopes.

Condition: This habitat was historically altered by fire, livestock grazing, or cultivation. In some areas it is dominated by non–native and invasive species, particularly annual grasses. Invasive annual grasses have altered the fire regime, resulting in a habitat that is susceptible to frequent fire and is difficult to restore to native habitat. Livestock grazing is a common use. This habitat is vulnerable to permanent conversion to residential or commercial development where it is located near urban areas.

Issues	Recommended Actions	Priority
Non–native annual grasses have reduced the value of this habitat for wildlife and have altered fire regimes by increasing fire frequency, which leads to the loss of native shrubs.	Restore with native perennial grasses and forbs or functional equivalents. Increase native shrub component where feasible.	H
	Coordinate habitat management activities with private landowners having key wildlife habitats.	H
	Encourage development of farm/ranch conservation plans through federal agencies and soil conservation districts.	H
	Address the needs of wildlife in farm/ranch plans and farm programs (e.g., Conservation Reserve Program, Wildlife Habitat Improvement Program, Landowner Incentive Program).	H
Overgrazing or grazing at the wrong time of the year can reduce the value of the habitat for wildlife.	Adjust season and level of use as needed with appropriate grazing schedules and best management practices to promote desired habitat conditions and restoration efforts.	M
Non–native annual grasses have increased fire frequency and severity that threatens adjacent intact habitats.	Develop and implement interagency plans to manage and control fire.	H

Upland Deciduous Forest Habitat

Ecological Systems:

- Rocky Mountain Aspen Forest and Woodland
- Rocky Mountain Bigtooth Maple Ravine Woodland
- Inter–Mountain Basins Aspen–Mixed Conifer Forest and Woodland

Distribution: This habitat occurs in scattered locations throughout the foothills and mountains of the state and is a dominant habitat along the Idaho–Wyoming border. It typically occurs at mid–elevations around 1900 m (6500 ft) but may be found between 800–3000 m (2600–9800 ft).

Condition: Fire plays an important role in the maintenance of seral stages and stand structure. One of the dominant tree canopy species, aspen, regenerates after fire or stand disturbances through root sprouting. Conifer encroachment in aspen stands is common as a result of fire suppression and extensive browsing by livestock and wildlife has adversely affected aspen growth and regeneration in some areas. Invasive plants have also become established as a result of habitat disturbance.

Habitat loss through conversion to residential development is of local importance. Phosphate mining has had a significant long–term impact on these habitats in eastern Idaho. This habitat typically occurs in landscapes that are extensively used for recreation and livestock grazing, and increasingly for residential development.

Issues	Recommended Actions	Priority
Reduced fire frequency has resulted in conifers replacing aspen.	Where appropriate, use prescribed burns or mechanical treatments to eliminate conifers and stimulate aspen regeneration.	H
Overgrazing or grazing at the wrong time of the year can reduce the value of habitat for wildlife.	Adjust season and level of use as needed with appropriate grazing schedules and best management practices to promote desired habitat conditions and restoration efforts.	H
Large–scale, open–pit phosphate mining has altered large acreages of this habitat along the Idaho–Wyoming border.	Use native vegetation in the reclamation of phosphate mines, particularly the reestablishment of aspen.	M
	Reduce the impacts of mines to key wildlife habitats.	M
Residential development results in direct loss of habitat and habitat fragmentation.	Reduce and mitigate the impacts of residential developments on wildlife.	H
Unmanaged OHV use results in direct loss of habitat, habitat fragmentation, and the spread of invasive species.	Restrict OHV use to designated roads and trails; close sensitive areas; educate users; enforce OHV regulations.	H

Dry Conifer Forest

Ecological Systems:
- Northern Rocky Mountain Dry–Mesic Montane Mixed Conifer Forest
- Northern Rocky Mountain Ponderosa Pine Woodland and Savanna
- Rocky Mountain Dry–Mesic Montane Mixed Conifer Forest and Woodland
- Northern Rocky Mountain Western Larch Woodland

Distribution: These woodlands are widespread north of the Snake River Plain in the mountainous regions of northern and central Idaho, and in scattered localities in mountains south of the Snake River. This habitat occurs at 610–3000 m (2000–9800 ft).

Condition: In many areas this habitat has been modified by timber harvest, roads, residential development, and livestock grazing. Large tracts of this habitat occur in wilderness and roadless areas where the most important human impact is fire suppression. Frequent, low–intensity fires maintain stand composition and structure. Fire suppression has contributed to widespread decline in habitat quality and increased risk of large–scale, severe fires. To confound the problem, population growth within and around this habitat has led to increases in the wildland/urban interface. The growth of this interface increases the risk of wildfire and places habitat at higher risk of loss through stand–replacing fires.

Some forest stands are dominated by Douglas–fir and have decreased tree species diversity with few large–diameter trees and snags as a result of historic forest management practices, such as removal of large–diameter trees, clear–cutting, and timber plantations. Understory composition and coarse woody debris has been altered by fire suppression. Increased abundance of invasive plants has occurred in some areas as a result of soil disturbance and seed dispersal from livestock, road development, and recreational use.

Issues	Recommended Actions	Priority
Reduced fire frequency has altered the vegetative structure and composition resulting in increased risk of stand–replacing fires.	Restore and maintain historic fire intervals through the use of prescribed fire, timber harvest, and thinning.	H
	Allow naturally caused fires to burn where feasible.	H
	Reduce fire risks in wildland/urban interface.	H
Loss of large–diameter trees reduces the value of this habitat to wildlife.	Use appropriate silvicultural techniques to manage stands to achieve old growth attributes, including snag recruitment,	H

	downed logs and coarse woody debris.	
Unmanaged OHV use results in direct loss of habitat, habitat fragmentation, and the spread of invasive plants.	Restrict OHV use to designated roads and trails; close sensitive areas; educate users; enforce OHV regulations.	M
Invasive plant species replace native species and reduce the value of habitat for wildlife.	Use appropriate methods to control invasive plant species and restore native species.	M
	Develop new methods to control invasive species.	L
Highways and roads can fragment forest habitats and result in direct mortality.	Identify and manage linkage zones to provide connectivity between habitats for wide–ranging species.	H
	Locate and design highways and roads to reduce and mitigate impacts to wildlife and key habitats.	H
Overgrazing or grazing at the wrong time of the year can reduce the value of habitat for wildlife.	Adjust season and level of use as needed with appropriate grazing schedules and best management practices to promote desired habitat conditions and restoration efforts.	L

Northern Mesic Conifer Forest

Ecological Systems:
- Northern Rocky Mountain Western Hemlock–Western Red Cedar Forest
- Northern Rocky Mountain Conifer Swamp

Distribution: This habitat is widespread in areas influenced by mild maritime air masses throughout north and central Idaho. Precipitation typically occurs as rain; where snow does occur, it is often melted by rain during warm winter storms. Habitat occurs on all slopes and aspects but most commonly on sites with high soil moisture, such as toeslopes and bottomlands. At the periphery of the distribution, this habitat is confined to moist canyons with cool aspects. This habitat typically occurs below 760 m (2500 ft) but can occur up to 1360 m (4500 ft) and often in a mosaic with dry conifer and subalpine habitats. Northern mesic conifer occupies the more productive sites within this mosaic.

Condition: Relatively mild, moist environmental conditions on sites that support this habitat contribute to high levels of productivity. Mixed–severity fire and, to a lesser degree, windfall are important natural disturbance factors. Significant acreage of this

habitat occurs in wilderness and roadless areas. This habitat has been significantly altered by an introduced pathogen, white pine blister rust that in combination with historic logging has eliminated white pine. The loss of white pine and fire suppression has resulted in a conversion to true firs and Douglas–fir making these forest habitats more susceptible to uncharacteristic wildfire. Most of this habitat outside of wilderness has been affected by timber harvest and roads, which has caused surface disturbance to soils and ground litter, and altered coarse woody debris. Fire suppression has altered natural fire regimes. Late–seral stands of this habitat are increasingly rare and occur primarily in protected areas. Many tracts in valley bottoms and on lower slopes of mountains have been fragmented by urban development and highways.

Issues	Recommended Actions	Priority
Vegetative structure and composition has been altered.	Restore and maintain historic fire intervals and disturbance patterns through the use of prescribed fire, timber harvest, and thinning.	H
	Allow naturally caused fires to burn where feasible.	H
	Reduce fire risks in wildland/urban interface.	H
Timber harvest can alter forest structure, composition, and woody debris.	Conduct timber harvest to mimic natural disturbance patterns and establish a mix of seral stages.	M
	Manage stands to ensure a diversity of sizes and decay classes of snags, downed logs, and coarse woody debris.	M
	Provide corridors of intact, minimally disturbed habitat for wide–ranging species.	M
Highways and roads can fragment forest habitats and result in direct mortality.	Identify and manage linkage zones to provide connectivity between habitats for wide–ranging species.	H
	Locate and design highways and roads to reduce and mitigate impacts to wildlife and key habitats.	H

Subalpine Forest

Ecological Systems:

- Northern Rocky Mountain Subalpine Dry Parkland
- Rocky Mountain Lodgepole Pine Forest
- Rocky Mountain Subalpine Dry–Mesic Spruce–Fir Forest and Woodland

- Rocky Mountain Subalpine Mesic Spruce–Fir Forest and Woodland

Distribution: This habitat is dispersed throughout the higher elevations of Idaho where precipitation predominantly occurs as snow. Snow packs are often deep and can persist well into relatively cool summers. This habitat occurs on gentle to very steep mountain slopes, high–elevation ridges, and alluvial terraces, as well as higher–elevation valleys on well–drained glacial drift, alluvium, and shallow soils overlying fractured quartzite bedrock.

Condition: Fire is important for maintaining a range of seral stages characteristic of this habitat. The natural fire disturbance regime is of relatively infrequent, mixed– to high–severity fire that results in a patchwork of forests with varying stand structure and composition. Some of the dominant trees of the habitat, notably lodgepole pine, are adapted to the cyclic occurrence of drought, fire, and insects. Fire suppression has contributed to outbreaks of mountain pine beetle and the increased intensity of subsequent fires. Fire suppression also limits the development of early–seral stages of this habitat. In some locations, widespread and rapid decline of early seral–stage habitat has been compounded by an introduced pathogen, white pine blister rust. This fungus has caused mortality of whitebark pine and, to an increasing extent, limber pine. Significant acreages of the habitat occur in roadless areas or wilderness where human disturbance is minimal.

Mountain valleys have been increasingly developed, particularly for recreational and seasonal use, causing habitat loss and fragmentation, increased wildlife/human interaction, and increased fire risk in the wildland/urban interface.

Issues	Recommended Actions	Priority
Timber harvest can alter forest structure, composition, and woody debris.	Conduct timber harvest to mimic natural disturbance patterns and establish a mix of seral stages.	M
	Manage stands to ensure a diversity of sizes and decay classes of snags, downed logs and coarse woody debris.	M
	Provide corridors of intact, minimally disturbed habitat for wide–ranging species.	M
Fire suppression has altered the vegetative structure and composition resulting in increased risk of stand–replacing fires.	Restore and maintain historic fire intervals through the use of prescribed fire, timber harvest, and thinning.	H
	Allow naturally caused fires to burn where feasible.	H
	Reduce fire risks in wildland/urban interface.	H

	Design and implement management programs to restore and enhance whitebark pine.	H
Highways and roads can fragment forest habitats and result in direct mortality.	Identify and manage linkage zones to provide connectivity between habitats for wide–ranging species.	H
	Locate and design highways and roads to reduce and mitigate impacts to wildlife and key habitats.	H

Mesic Deciduous Shrubland

Ecological Systems:
- Northern Rocky Mountain Lower Montane Mesic Deciduous Shrubland

Distribution: Habitat structure and composition varies considerably in response to elevation, exposure, soils, and precipitation. This habitat occurs in the lower montane and foothill landscapes at elevations between 1000–2200 m (3500–7000 ft) throughout Idaho. These deciduous shrublands occur in a patchy distribution on slopes of canyons and foothills, around the periphery of talus slopes, at the heads of dry drainages, or on mesic toeslopes.

Condition: This habitat is persistent and somewhat resilient to occasional natural and anthropogenic disturbances. The response of this habitat to fire is highly variable depending on location, precipitation, and timing of fire events. In northern Idaho this habitat increases with fire. In southern Idaho stand–replacing fires can reduce the extent of this habitat and have severe effects on species composition. Grazing by livestock and wildlife can be important on big game winter ranges. Species composition has been degraded by invasive plants in some areas.

Issues	Recommended Actions	Priority
Invasive plant species replace native species and reduce the value of habitat for wildlife.	Use appropriate methods to control invasive plant species and restore native species.	H
	Conduct research in to new methods to control invasive species.	M
Overgrazing or grazing at the wrong time of the year can reduce the value of the habitat for wildlife.	Adjust season and level of use as needed with appropriate grazing schedules and best management practices to promote desired habitat conditions and restoration efforts.	H

Altered fire regimes have resulted in loss and/or degradation of this habitat.	Develop and implement site specific fire prescriptions to maintain, rejuvenate, or expand this habitat as appropriate.	M
Unmanaged OHV use results in direct loss of habitat, habitat fragmentation, and the spread of invasive species.	Restrict OHV use to designated roads and trails; close sensitive areas; educate users; enforce OHV regulations.	M

Southern Xeric Shrubland and Steppe

Ecological Systems:
- Inter–Mountain Basins Big Sagebrush Shrubland
- Inter–Mountain Basins Mixed Salt Desert Scrub
- Columbia Plateau Low Sagebrush Steppe
- Columbia Plateau Steppe and Grassland
- Inter–Mountain Basins Big Sagebrush Steppe
- Inter–Mountain Basins Montane Sagebrush Steppe
- Inter–Mountain Basins Semi–Desert Shrub–Steppe

Distribution: Sagebrush shrubland and steppe is the dominant habitat south of the Salmon River in Idaho. This diverse habitat occurs predominantly on xeric sites below 2500 m (8500 ft).

Condition: Habitat structure and composition varies considerably in response to elevation, exposure, soils, and other environmental conditions. In general, this habitat consists of large expanses affected by the conversion to agriculture, livestock grazing and management, invasive plants, altered fire regimes, and soil disturbance. The diversity of understory vegetation has declined, and cheatgrass and other invasive plants have become established. Significant acreages of sagebrush steppe have been converted by agriculture, urbanization, and seedings of non–native grasses. The natural fire regime has been altered by invasion of cheatgrass and contributes to the loss of native vegetation. This habitat has been significantly altered by man, particularly at lower elevations, resulting in a landscape that is highly fragmented.

Issues	Recommended Actions	Priority
Invasive plant species replace native species and reduce the value of habitat for wildlife.	Use appropriate methods to control invasive plant species and restore native species.	H
Invasive annual grasses can alter fire regimes by increasing fire frequency, which leads to the loss of native shrubs.	Develop new methods to control invasive species.	H
	Develop new methods to restore shrubland and steppe habitats.	H
Conversion and degradation has	Identify and conserve large	H

resulted in landscape–scale loss and fragmentation of this habitat.	remaining areas of intact shrub–steppe in good ecological condition.	
	Restore key degraded areas that connect intact habitats with native species of shrubs, grasses and forbs or their functional mimics.	M
Fire removes shrubs and promotes establishment of invasive species, particularly cheatgrass. This conversion results in an area prone to repeated fires and loss of shrubs.	Prioritize key areas of intact habitat for fire protection and control.	H
	Seed burned areas with native shrubs. Use native forbs and grasses or their functional mimics to reestablish understory vegetation.	H
	Develop new methods to control invasive species.	M
	Use adaptive management to improve restoration of shrubland and steppe habitats.	M
Overgrazing or grazing at the wrong time of the year can reduce the value of the habitat for wildlife.	Adjust season and level of use as needed with appropriate grazing schedules and best management practices to promote desired habitat conditions and restoration efforts.	H
Unmanaged OHV use results in direct loss of habitat, habitat fragmentation, and the spread of invasive species.	Restrict OHV use to designated roads and trails; close sensitive areas; educate users; enforce OHV regulations.	M

Dry Grassland

Ecological Systems:
- Columbia Basin Foothill and Canyon Dry Grassland
- Northern Rocky Mountain Plateau and Valley Grassland

Distribution: This habitat occurs in scattered localities throughout the state. Habitat is typically on long, steep slopes in open canyons, lower foothill slopes, or low valleys and adjacent side slopes. The range of the habitat is approximately 600–2000 m (2000–6500 ft).

Condition: The natural fire disturbance regime is relatively frequent and low–intensity. The fire return interval is estimated to be less than 20 years. In some areas, long–term fire suppression has enabled shrubs to become too abundant. Alternatively, in other

locations invasive plants have increased the frequency of fire, and this has accelerated the establishment and dispersal of more invasive plants. This habitat has been degraded by invasive species in many areas. Yellow star–thistle is rapidly spreading into new areas and is a significant conservation concern. Invasive species are often associated with soil disturbance resulting from roads, OHVs, and livestock. At lower elevations, this habitat has been converted to croplands or residential areas. OHV use is common in this habitat.

Issues	Recommended Actions	Priority
Invasive plant species replace native species and reduce the value of habitat for wildlife.	Inventory and map areas affected by invasive species.	H
	Use appropriate methods to control invasive plant species and restore native species or functional mimics.	H
	Conduct research into new methods to control invasive species.	M
Altered fire regimes have resulted in degradation of this habitat.	Develop and implement site–specific fire prescriptions to maintain, rejuvenate, or expand this habitat as appropriate.	M
Unmanaged OHV use results in direct loss of habitat, habitat fragmentation, and the spread of invasive species.	Restrict OHV use to designated roads and trails; close sensitive areas; educate users; enforce OHV regulations.	M
Overgrazing or grazing at the wrong time of the year can reduce the value of the habitat for wildlife.	Adjust season and level of use as needed with appropriate grazing schedules and best management practices to promote desired habitat conditions and restoration efforts.	M

Palouse Prairie

Ecological Systems:
- Columbia Basin Palouse Prairie

Distribution: This habitat occurs in the western portion of north–central Idaho. It is located on gentle, rolling terrain at elevations between approximately 600–900 m (2000–3000 ft).

Condition: The vast majority of original Palouse Prairie habitat was converted to arableland habitat many years ago and as a result is considered the most endangered

habitat in Idaho. Remnants are isolated patches dominated by non–native and invasive plants. The remaining remnant patches no longer function as an intact prairie ecosystem. Nearly all of this habitat is on private land.

Issues	Recommended Actions	Priority
Historic conversion has resulted in landscape–level loss and fragmentation of this habitat.	In cooperation with landowners, inventory and map remnant Palouse Prairie tracts.	H
	Provide information to landowners on the rarity, value, and protection of Palouse Prairie habitat.	H
	Address the needs of wildlife in farm/ranch plans and farm programs (e.g., Conservation Reserve Program, Wildlife Habitat Improvement Program, Landowner Incentive Program).	H
Invasive plant species replace native species and reduce the value of habitat for wildlife.	Use appropriate methods to control invasive plant species and restore native species.	H
Drift associated with application of herbicides threatens the plant species composition of remnant Palouse Prairie tracts.	Develop information pertaining to the location of Palouse Prairie tracts and the impacts of unintentional spraying.	M

Open Water

Ecological Systems:
- Open Water

Distribution: This habitat consists of lakes and reservoirs statewide.

Condition: Open water habitat includes both man–made reservoirs and natural lakes. Water quality and shoreline habitat has declined in some lakes as a result of commercial, agricultural, industrial, and/or residential development. Man–caused fluctuations in water level occur in some natural lakes and nearly all reservoirs. Non–native fish species have been introduced in many natural lakes and all reservoirs. Invasive aquatic species have degraded some lakes.

Issues	Recommended Actions	Priority
Development can affect water quality and reduce the value of habitat for wildlife.	Reduce and mitigate impacts of development on lakes.	H
	Develop lake management plans to maintain or enhance water quality.	M

Shoreline development (e.g., boat docks, riprap) can degrade habitat and reduce its value for wildlife.	Reduce and mitigate impacts of shoreline alterations.	H
Invasive species can replace native species and reduce the value of habitat for fish and wildlife.	Educate the public regarding the impacts of invasive aquatic species and controlling their spread.	H
	Use appropriate methods to control aquatic invasive species and eliminate their spread.	M
	Develop new methods to control invasive species.	M
Water management for man's use can cause fluctuations in lake and reservoir levels that reduce the value of habitat for wildlife.	Minimize impacts of water management on wildlife.	M
	Obtain minimum pools in reservoirs where appropriate and feasible.	M

Flowing Water

Ecological Systems:
- Open Water

Distribution: Rivers and streams statewide.

Condition: Flowing water habitat has been significantly altered and while many of the streams and rivers are in natural condition, nearly all river systems have been impacted to some degree by man's activities, and some have been severely degraded. Habitat has been fragmented, the quantity and timing of flows has been altered, and water quality has been degraded in many areas.

Issues	Recommended Actions	Priority
Information regarding the classification, quantity, and distribution of flowing–water habitats and associated species is incomplete.	Develop an aquatic community classification system.	H
	Develop a database of all streams and associated aquatic habitat characteristics.	H
Altering the quantity and timing of flows can reduce the value of habitat for wildlife.	Manage flow regimes that balance the needs of wildlife and man's use of water.	H
	Devise and implement projects to reconnect tributaries to main stems.	M

	Obtain minimum stream flows where necessary and feasible to maintain habitat for wildlife.	M
Dams and diversions can fragment habitat by creating movement barriers.	Provide upstream and downstream passage.	H
	In cooperation with agencies and willing landowners devise and implement projects to screen diversions.	H
	Require screening of all new diversions as specified in Idaho Code.	M
Roads and highways can fragment habitat by creating movement barriers (e.g., culverts).	Identify, prioritize, and map movement barriers.	H
	Provide fish passage at priority highway and road crossings.	H
	Provide fish passage on new road construction and rebuilds.	H
Degraded water quality can reduce the value of habitat for wildlife.	Improve water quality and attain water quality standards while balancing economics and resource concerns.	H
	Encourage the development of watershed plans to maintain or enhance water quality.	M

Wetland

Ecological Systems:
- Columbia Plateau Silver Sagebrush Seasonally Flooded Shrub–Steppe
- Inter–Mountain Basins Greasewood Flat
- North American Arid West Emergent Marsh
- Inter–Mountain Basins Playa
- Other wetlands imbedded in other habitats and ecological systems.

Distribution: This diverse habitat occurs throughout Idaho.

Condition: This habitat is often located on gentle terrain near rivers, streams, and lakes and thus readily accessible to and altered by humans. Approximately half of the wetlands in Idaho have been lost due to man's use of the land. Many remaining wetlands have been impacted by invasive species. Livestock grazing and OHV use has altered wetland vegetation and function in some areas.

Issues	Recommended Actions	Priority
Wetland habitat continues to be	Reduce the loss of wetlands.	H

lost to development.	Mitigate unavoidable losses of wetlands by creating new wetlands and restoring or enhancing existing wetlands.	H
Invasive plant species replace native species and reduce the value of habitat for wildlife.	Inventory and map areas affected by invasive species.	M
	Use appropriate methods to control invasive plant species and restore native species.	M
	Develop new methods to control invasive species.	M
Overgrazing or grazing at the wrong time of the year can reduce the value of the habitat for wildlife.	Adjust season and level of use as needed with appropriate grazing schedules and best management practices to promote desired habitat conditions and restoration efforts.	M
Unmanaged OHV use results in direct loss of habitat, habitat fragmentation, and the spread of invasive species.	Restrict OHV use to designated roads and trails; close sensitive areas; educate users; enforce OHV regulations.	H

Riparian Woodland

Ecological Systems:
- Columbia Basin Foothill Riparian Woodland and Shrubland
- Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland
- Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland
- Rocky Mountain Lower Montane Riparian Woodland and Shrubland
- Rocky Mountain Subalpine–Montane Riparian Shrubland
- Rocky Mountain Subalpine–Montane Riparian Woodland

Distribution: Riparian habitat occurs throughout Idaho. This habitat occurs in a linear pattern along lakes, major rivers, tributaries, intermittent streams, side channels, and other waterways.

Condition: Plant biomass is high relative to surrounding upland habitats, and surface water is present in this habitat. As a result human and livestock use are often concentrated in this environment, and this has resulted in altered plant composition and structure and soil compaction. Water management has altered hydrology and geologic processes and contributed to the degradation of riparian habitats. Loss or degradation of riparian vegetation has resulted in bank and streambed erosion, which has resulted in the subsequent loss of functional floodplains and streamside wetlands in many areas. Stream banks and riparian habitats have been altered by riprap, channelization,

urbanization, and highways. Invasive plants, including Russian olive, tamarisk, desert false indigo, reed canarygrass, and creeping bentgrass, are common in many areas.

Many riparian habitats are currently well managed and properly functioning, particularly, but not exclusively, in wilderness and roadless areas. However, riparian habitats have been and continue to be heavily impacted by man. Resource management programs on both public and private land are focused on improving the condition of riparian habitats. Riparian habitats can respond quickly to restoration efforts.

Issues	Recommended Actions	Priority
Overgrazing or grazing at the wrong time of the year can reduce the value of the habitat for wildlife.	Adjust season and level of use as needed with appropriate grazing schedules and best management practices to promote desired habitat conditions and restoration efforts.	H
Alteration of stream flows can affect streamside wetlands and vegetation.	Develop flow regimes that balance the needs of man's use of water and natural processes that maintain riparian habitats.	H
	Obtain minimum stream flows where necessary and feasible to maintain riparian habitats.	H
Development (e.g., highways, urban) can reduce or eliminate riparian habitats.	Reduce and mitigate impacts of development on streamside habitat and natural vegetation.	H
Invasive plant species replace native species and reduce the value of habitat for wildlife.	Inventory and map areas affected by invasive species.	M
	Use appropriate methods to control invasive plant species and restore native species.	M
	Conduct research into new methods to control invasive species.	M
Roads and trails in riparian corridors can eliminate or degrade vegetation, increase erosion, degrade water quality, and impair natural processes necessary to maintain streamside habitats.	Design travel corridors to minimize disturbance to riparian habitats and relocate out of the riparian zone where feasible.	M
	Use best management practices to reduce sediment delivery.	H
Timber harvest in riparian zones can increase erosion, reduce shading of the stream, and reduce recruitment of woody debris.	Follow the Idaho Forest Practices Act and other silvicultural best management practices regarding timber harvest in riparian zones.	M

Dune, Canyon, and Rockland

Ecological Systems:
- Inter–Mountain Basins Active and Stabilized Dune
- Inter–Mountain Basins Cliff and Canyon
- Inter–Mountain Basins Volcanic Rock and Cinder Land
- Rocky Mountain Cliff, Canyon and Massive Bedrock

Distribution: This habitat occurs in north–central, southern, and eastern Idaho in a wide variety of topographic settings. In eastern Idaho large acreages of this habitat are lava flows. Large dune complexes occur in southwestern and eastern Idaho.

Condition: Natural disturbance in this habitat is minimal, consisting primarily of erosion. Vegetation is minimal in many areas because severe conditions and inorganic substrates limit the establishment of vegetation. In some areas these habitats have been impacted by mining and off–road vehicles.

Issues	Recommended Actions	Priority
OHV use can impact dune–dwelling species and their habitats.	Consider the needs of dune–dwelling species in managing OHV recreation.	M
Recreation (e.g., rock climbing, cave exploring) can disturb wildlife (e.g., nesting raptors) and degrade specialized habitats.	Balance recreational use and the needs of wildlife.	M

As part of the prioritization process, we identified the key sections in the state that were representative of each ecological system relative to other sections (Table 3).

Table 2. Key ecological sections for Ecological Systems.

Okanogan Highlands	▪ Northern Rocky Mountain Conifer Swamp ▪ Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland ▪ Northern Rocky Mountain Plateau and Valley Grassland ▪ Open Water
Flathead Valley	Does not represent core distribution of any one ecological system.
Bitterroot Mountains	▪ Northern Rocky Mountain Western Hemlock–Western Red Cedar Forest ▪ Northern Rocky Mountain Western Larch Woodland

Blue Mountains	▪ Columbia Basin Foothill and Canyon Dry Grassland ▪ Rocky Mountain Cliff, Canyon and Massive Bedrock
Idaho Batholith	▪ Inter–Mountain Basins Cliff and Canyon ▪ North American Alpine Ice Field ▪ Northern Rocky Mountain Dry–Mesic Montane Mixed Conifer Forest ▪ Northern Rocky Mountain Lower Montane Mesic Deciduous Shrubland ▪ Northern Rocky Mountain Ponderosa Pine Woodland and Savanna ▪ Rocky Mountain Alpine–Montane Wet Meadow ▪ Rocky Mountain Lodgepole Pine Forest ▪ Rocky Mountain Subalpine Dry–Mesic Spruce–Fir Forest and Woodland ▪ Rocky Mountain Subalpine Mesic Meadow ▪ Rocky Mountain Subalpine Mesic Spruce–Fir Forest and Woodland ▪ Rocky Mountain Subalpine–Montane Riparian Shrubland ▪ Rocky Mountain Subalpine–Montane Riparian Woodland
Challis Volcanics	▪ Northern Rocky Mountain Subalpine Dry Parkland
Beaverhead Mountains	▪ Inter–Mountain Basins Montane Sagebrush Steppe ▪ Inter–Mountain Basins Mountain Mahogany Woodland and Shrubland [this seems strange; Owyhee uplands was #2] ▪ Northern Rocky Mountain Montane Grassland ▪ Rocky Mountain Alpine Bedrock and Scree ▪ Rocky Mountain Alpine Dwarf–Shrubland ▪ Rocky Mountain Dry Tundra
Palouse Prairie	▪ Columbia Basin Foothill Riparian Woodland and Shrubland ▪ Columbia Basin Palouse Prairie ▪ Developed
Owyhee Uplands	▪ Columbia Plateau Low Sagebrush Steppe ▪ Columbia Plateau Silver Sagebrush Seasonally Flooded Shrub–Steppe ▪ Columbia Plateau Steppe and Grassland ▪ Columbia Plateau Western Juniper Woodland and Savanna ▪ Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland ▪ High Intensity Urban ▪ Inter–Mountain Basins Big Sagebrush Shrubland ▪ Inter–Mountain Basins Big Sagebrush Steppe

	▪ Inter–Mountain Basins Mixed Salt Desert Scrub ▪ Inter–Mountain Basins Semi–Desert Shrub–Steppe ▪ Seeded Perennial Grassland
Snake River Basalts	▪ Disturbed and Invasive Grass and Forb ▪ Herbaceous Planted and Cultivated ▪ Inter–Mountain Basins Playa ▪ Inter–Mountain Basins Active and Stabilized Dune ▪ Inter–Mountain Basins Greasewood Flat ▪ Inter–Mountain Basins Volcanic Rock and Cinder Land ▪ Low Intensity Urban
Northwestern Basin and Range	▪ Great Basin Pinyon–Juniper Woodland ▪ Inter–Mountain Basins Juniper Savanna
Overthrust Mountains	▪ Inter–Mountain Basins Aspen–Mixed Conifer Forest and Woodland ▪ Rocky Mountain Aspen Forest and Woodland ▪ Rocky Mountain Bigtooth Maple Ravine Woodland ▪ Rocky Mountain Lower Montane Riparian Woodland and Shrubland ▪ Rocky Mountain Dry–Mesic Montane Mixed Conifer Forest and Woodland
Yellowstone Highlands	▪ Northern Rocky Mountain Subalpine Dry Grassland
Bear Lake	▪ North American Arid West Emergent Marsh

Statewide Priority Habitats and Associated Vertebrate Species in Idaho

Arableland

Ecological Systems:
- Herbaceous Planted and Cultivated

Amphibians
Northern Leopard Frog *Rana pipiens*

Birds
Northern Pintail *Anas acuta*
Greater Sage–Grouse *Centrocercus urophasianus*
Sharp–tailed Grouse *Tympanuchus phasianellus*
Black–crowned Night–Heron *Nycticorax nycticorax*
White–faced Ibis *Plegadis chihi*

Merlin *Falco columbarius*
Upland Sandpiper *Bartramia longicauda*
Long–billed Curlew *Numenius americanus*
Franklin's Gull *Larus pipixcan*
California Gull *Larus californicus*
Burrowing Owl *Athene cunicularia*

Mammals
Coast Mole *Scapanus orarius*
Wyoming Ground Squirrel *Spermophilus elegans*
Townsend's Pocket Gopher *Thomomys townsendii*

Non–native Herbaceous

Ecological Systems:
- Seeded Perennial Grassland

Amphibians
Northern Leopard Frog *Rana pipiens*

Reptiles
Groundsnake *Sonora semiannulata*

Birds
Upland Sandpiper *Bartramia longicauda*
Grasshopper Sparrow *Ammodramus savannarum*

Mammals
Merriam's Shrew *Sorex merriami*
California Myotis *Myotis californicus*
Rock Squirrel *Spermophilus variegatus*
Townsend's Pocket Gopher *Thomomys townsendii*
Dark Kangaroo Mouse *Microdipodops megacephalus*
Bighorn Sheep (populations south of the Snake River) *Ovis canadensis*

Upland Deciduous Forest

Ecological Systems:
- Rocky Mountain Aspen Forest and Woodland
- Rocky Mountain Bigtooth Maple Ravine Woodland

Birds
Yellow–billed Cuckoo *Coccyzus americanus*

Mammals
Rock Squirrel *Spermophilus variegatus*

Southern Woodland

Ecological Systems:
- Inter–Mountain Basins Mountain Mahogany Woodland and Shrubland
- Columbia Plateau Western Juniper Woodland and Savanna

Mammals
California Myotis *Myotis californicus*
Piñon Mouse *Peromyscus truei*

Dry Conifer Forest

Ecological Systems:
- Northern Rocky Mountain Dry–Mesic Montane Mixed Conifer Forest
- Northern Rocky Mountain Ponderosa Pine Woodland and Savanna
- Northern Rocky Mountain Western Larch Woodland

Amphibians
Columbia Spotted Frog (populations south of the Snake River) *Rana luteiventris*
Wood Frog *Rana sylvatica*
Idaho Giant Salamander *Dicamptodon aterrimus*
Coeur d'Alene Salamander *Plethodon idahoensis*

Reptiles
Ring–necked Snake *Diadophis punctatus*

Birds
Harlequin Duck *Histrionicus histrionicus*
Mountain Quail *Oreortyx pictus*
Bald Eagle *Haliaeetus leucocephalus*
Peregrine Falcon *Falco peregrinus*
Boreal Owl *Aegolius funereus*
Black Swift *Cypseloides niger*
White–headed Woodpecker *Picoides albolarvatus*
American Three–toed Woodpecker *Picoides dorsalis*
Pygmy Nuthatch *Sitta pygmaea*
South Hills Crossbill *Loxia* sp. [undescribed]
White–winged Crossbill *Loxia leucoptera*
Lesser Goldfinch *Carduelis psaltria*

Mammals
Pygmy Shrew *Sorex hoyi*
Coast Mole *Scapanus orarius*
Fringed Myotis *Myotis thysanodes*
Red–tailed Chipmunk *Neotamias ruficaudus*

Northern Idaho Ground Squirrel *Spermophilus brunneus brunneus*
Southern Idaho Ground Squirrel *Spermophilus brunneus endemicus*
Gray Wolf *Canis lupus*
Kit Fox *Vulpes macrotis*
Brown Bear *Ursus arctos*
Fisher *Martes pennanti*
Wolverine *Gulo gulo*
Canada Lynx *Lynx canadensis*
Caribou *Rangifer tarandus*
Mountain Goat *Oreamnos americanus*

Northern Mesic Conifer Forest

Ecological Systems:
- Northern Rocky Mountain Western Hemlock–Western Red Cedar Forest

Amphibians
Columbia Spotted Frog (populations south of the Snake River) *Rana luteiventris*
Wood Frog *Rana sylvatica*
Idaho Giant Salamander *Dicamptodon aterrimus*
Coeur d'Alene Salamander *Plethodon idahoensis*

Birds
Harlequin Duck *Histrionicus histrionicus*
Bald Eagle *Haliaeetus leucocephalus*
Boreal Owl *Aegolius funereus*
Black Swift *Cypseloides niger*
South Hills Crossbill *Loxia* sp. [undescribed]
White–winged Crossbill *Loxia leucoptera*

Mammals
Pygmy Shrew *Sorex hoyi*
Red–tailed Chipmunk *Neotamias ruficaudus*
Northern Bog Lemming *Synaptomys borealis*
Gray Wolf *Canis lupus*
Kit Fox *Vulpes macrotis*
Brown Bear *Ursus arctos*
Fisher *Martes pennanti*
Canada Lynx *Lynx canadensis*
Caribou *Rangifer tarandus*

Subalpine Forest

Ecological Systems:
- Northern Rocky Mountain Subalpine Dry Parkland
- Rocky Mountain Lodgepole Pine Forest

- Rocky Mountain Subalpine Dry–Mesic Spruce–Fir Forest and Woodland

Amphibians
Wood Frog *Rana sylvatica*
Idaho Giant Salamander *Dicamptodon aterrimus*

Birds
Harlequin Duck *Histrionicus histrionicus*
Bald Eagle *Haliaeetus leucocephalus*
Boreal Owl *Aegolius funereus*
Black Swift *Cypseloides niger*
White–headed Woodpecker *Picoides albolarvatus*
American Three–toed Woodpecker *Picoides dorsalis*
Pygmy Nuthatch *Sitta pygmaea*
South Hills Crossbill *Loxia* sp. [undescribed]
White–winged Crossbill *Loxia leucoptera*

Mammals
Pygmy Shrew *Sorex hoyi*
Dwarf Shrew *Sorex nanus*
Red–tailed Chipmunk *Neotamias ruficaudus*
Northern Bog Lemming *Synaptomys borealis*
Gray Wolf *Canis lupus*
Kit Fox *Vulpes macrotis*
Brown Bear *Ursus arctos*
Fisher *Martes pennanti*
Wolverine *Gulo gulo*
Canada Lynx *Lynx canadensis*
Caribou *Rangifer tarandus*
Mountain Goat *Oreamnos americanus*

Mesic Deciduous Shrubland

Ecological Systems:
- Northern Rocky Mountain Lower Montane Mesic Deciduous Shrubland

Amphibians
Coeur d'Alene Salamander *Plethodon idahoensis*

Birds
Mountain Quail *Oreortyx pictus*

Mammals
Bighorn Sheep (populations south of the Snake River) *Ovis canadensis*

Southern Xeric Shrubland and Steppe

Ecological Systems:

- Inter–Mountain Basins Big Sagebrush Shrubland
- Inter–Mountain Basins Mixed Salt Desert Scrub
- Columbia Plateau Low Sagebrush Steppe
- Inter–Mountain Basins Big Sagebrush Steppe
- Inter–Mountain Basins Montane Sagebrush Steppe
- Inter–Mountain Basins Semi–Desert Shrub–Steppe

Amphibians
Columbia Spotted Frog (populations south of the Snake River) *Rana luteiventris*
Northern Leopard Frog *Rana pipiens*

Reptiles
Great Basin Collared Lizard *Crotaphytus bicinctores*
Ring–necked Snake *Diadophis punctatus*
Long–nosed Snake *Rhinocheilus lecontei*
Groundsnake *Sonora semiannulata*

Birds
Greater Sage–Grouse *Centrocercus urophasianus*
Sharp–tailed Grouse *Tympanuchus phasianellus*
Mountain Quail *Oreortyx pictus*
Merlin *Falco columbarius*
Peregrine Falcon *Falco peregrinus*
Long–billed Curlew *Numenius americanus*
Burrowing Owl *Athene cunicularia*
Pinyon Jay *Gymnorhinus cyanocephalus*
Juniper Titmouse *Baeolophus ridgwayi*
Virginia's Warbler *Vermivora virginiae*
Grasshopper Sparrow *Ammodramus savannarum*
Lesser Goldfinch *Carduelis psaltria*

Mammals
Merriam's Shrew *Sorex merriami*
California Myotis *Myotis californicus*
Fringed Myotis *Myotis thysanodes*
Spotted Bat *Euderma maculatum*
Townsend's Big–eared Bat *Corynorhinus townsendii*
Pygmy Rabbit *Brachylagus idahoensis*
Columbia Plateau Ground Squirrel *Spermophilus canus*
Wyoming Ground Squirrel *Spermophilus elegans*
Great Basin Ground Squirrel *Spermophilus mollis*
Rock Squirrel *Spermophilus variegatus*
Idaho Pocket Gopher *Thomomys idahoensis*
Little Pocket Mouse *Perognathus longimembris*

Dark Kangaroo Mouse *Microdipodops megacephalus*
Piñon Mouse *Peromyscus truei*

Dry Grassland

Ecological Systems:
- Columbia Basin Foothill and Canyon Dry Grassland

Birds
Upland Sandpiper *Bartramia longicauda*
Grasshopper Sparrow *Ammodramus savannarum*

Mammals
Bighorn Sheep (populations south of the Snake River) *Ovis canadensis*

Palouse Prairie

Ecological Systems:
- Columbia Basin Palouse Prairie

Subalpine Grassland

Ecological Systems:
- Rocky Mountain Subalpine Mesic Meadow

Mammals
Northern Idaho Ground Squirrel *Spermophilus brunneus brunneus*
Southern Idaho Ground Squirrel *Spermophilus brunneus endemicus*

Alpine

Ecological Systems:
- Rocky Mountain Dry Tundra
- Rocky Mountain Alpine Bedrock and Scree

Birds
Black Rosy–Finch *Leucosticte atrata*

Mammals
Dwarf Shrew *Sorex nanus*

Open Water

Ecological Systems:
- Open Water

Birds
Trumpeter Swan *Cygnus buccinator*
Northern Pintail *Anas acuta*
Hooded Merganser *Lophodytes cucullatus*
Common Loon *Gavia immer*
Red–necked Grebe *Podiceps grisegena*
Western Grebe *Aechmophorus occidentalis*
Clark's Grebe *Aechmophorus clarkii*
American White Pelican *Pelecanus erythrorhynchos*
Snowy Egret *Egretta thula*
Black–crowned Night–Heron *Nycticorax nycticorax*
White–faced Ibis *Plegadis chihi*
Black–necked Stilt *Himantopus mexicanus*
American Avocet *Recurvirostra americana*
Franklin's Gull *Larus pipixcan*
California Gull *Larus californicus*
Black Tern *Chlidonias niger*

Southern Wetland

Ecological Systems:
- Inter–Mountain Basins Greasewood Flat
- North American Arid West Emergent Marsh

Birds
Trumpeter Swan *Cygnus buccinator*
Northern Pintail *Anas acuta*
Hooded Merganser *Lophodytes cucullatus*
Common Loon *Gavia immer*
Western Grebe *Aechmophorus occidentalis*
Clark's Grebe *Aechmophorus clarkii*
American White Pelican *Pelecanus erythrorhynchos*
Snowy Egret *Egretta thula*
Black–crowned Night–Heron *Nycticorax nycticorax*
White–faced Ibis *Plegadis chihi*
Black–necked Stilt *Himantopus mexicanus*
American Avocet *Recurvirostra americana*
Wilson's Phalarope *Phalaropus tricolor*
Forster's Tern *Sterna forsteri*
Franklin's Gull *Larus pipixcan*
California Gull *Larus californicus*
Black Tern *Chlidonias niger*

Riparian Woodland

Ecological Systems:

- Columbia Basin Foothill Riparian Woodland and Shrubland
- Rocky Mountain Subalpine–Montane Riparian Shrubland

Birds
Trumpeter Swan *Cygnus buccinator*
Hooded Merganser *Lophodytes cucullatus*
Common Loon *Gavia immer*
Red–necked Grebe *Podiceps grisegena*
Western Grebe *Aechmophorus occidentalis*
Clark's Grebe *Aechmophorus clarkii*
American White Pelican *Pelecanus erythrorhynchos*
Snowy Egret *Egretta thula*
Black–necked Stilt *Himantopus mexicanus*
American Avocet *Recurvirostra americana*
Wilson's Phalarope *Phalaropus tricolor*
Forster's Tern *Sterna forsteri*
Black Tern *Chlidonias niger*
Yellow–billed Cuckoo *Coccyzus americanus*

Dune, Canyon, and Rockland

Ecological Systems:
- Rocky Mountain Cliff, Canyon and Massive Bedrock

Birds
Black Rosy–Finch *Leucosticte atrata*